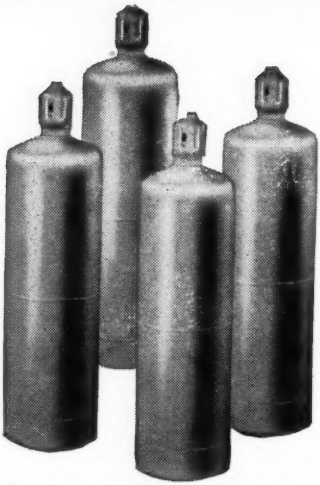
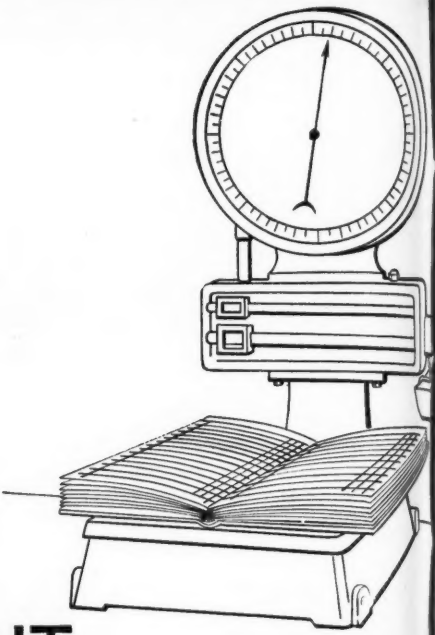
BUTANE-PROPANE News

THE RECOGNIZED AUTHORITY OF THE
LIQUEFIED PETROLEUM GAS INDUSTRY

DECEMBER, 1944





Light weight with its important economies is one result of Pressed Steel Tank Company's more than 40 years of working with numerous metals. This experience, together with volume manufacturing, assures the production of better products — products that last longer and reduce costs.

LIGHT WEIGHT—

CAN IT REDUCE COSTS FOR YOU?

LIGHTER weight has made Hackney Cylinders the favorite with many Butane-Propane producers. Handling is easier and faster. And there has been a downward revision in transportation costs.

The process used in the fabrication of Hackney Cylinders permits the production of the lightest weight container possible under existing I.C.C. specifications and consistent with the service requirements. By Hackney's cold-drawing process, uniform sidewall thickness is assured. There is only a single circumferential weld, X-ray controlled. All Hackney Cylinders are heat-treated after complete fabrication to further improve the physical properties. Long life is assured.

The war effort is being benefited by Hackney products in many ways. As the need for these products becomes less critical—and there is sufficient material available, Pressed Steel Tank Company plans to resume the production of products to meet civilian needs. Write for complete details today.

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Manufacturers of Hackney Products

GENERAL OFFICES AND FACTORY · 1487 SOUTH 66th STREET

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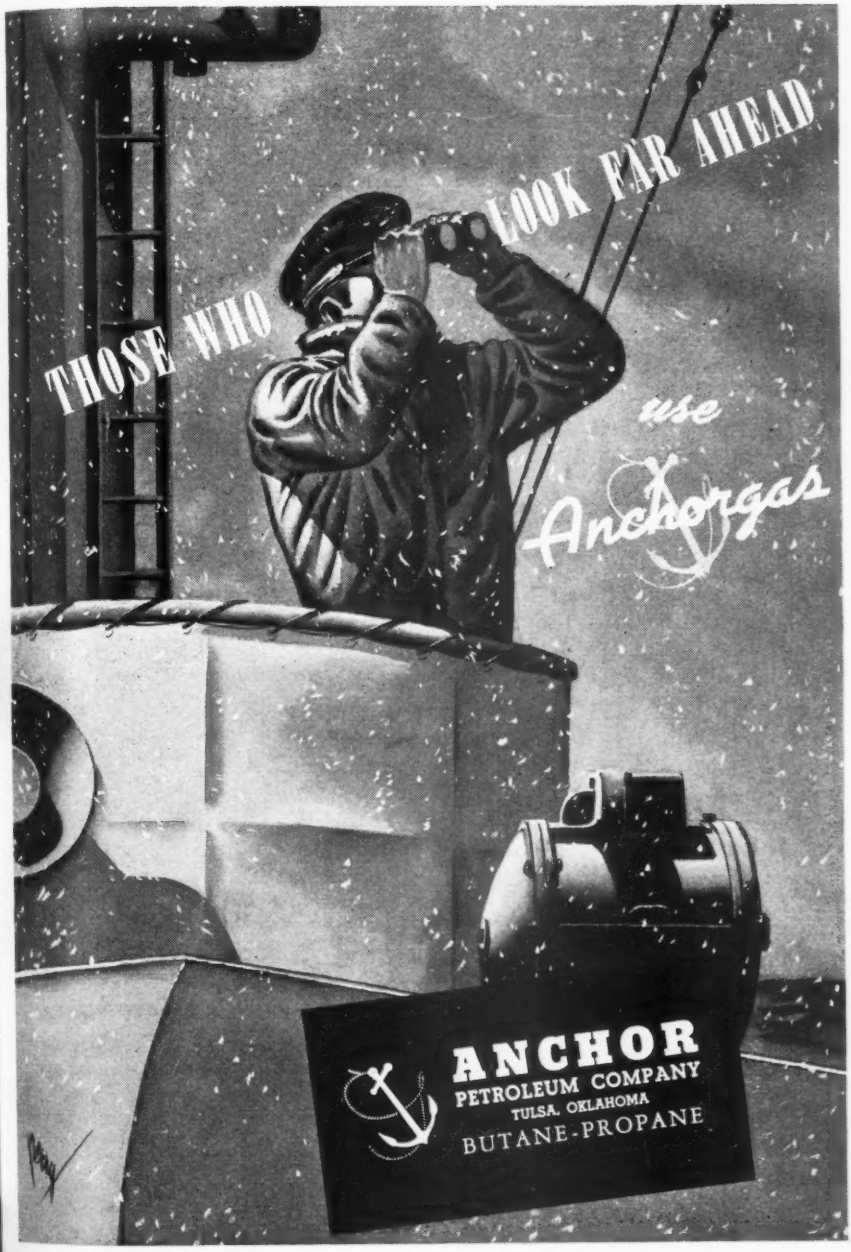
CONTAINERS FOR GASES, LIQUIDS AND SOLIDS


THOSE WHO LOOK FAR AHEAD
use
Anchorgas
ANCHOR
PETROLEUM COMPANY
TULSA, OKLAHOMA
BUTANE-PROPANE

BUTANE-PROPANE *News*

Reg. U.S. Pat. Off.

Contents for December, 1944

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LETTERS

• **Have you service or operating problems? Submit them to us and our technical department will endeavor to help you.—Ed.**

•

Gentlemen:

Where can I get information concerning the proper type of release or waste vent stack for butadiene and styrene gases and construction of same?

E. E. W.

Texas

We do not know of any firm manufacturing special waste stacks for such purposes, although many furnace manufacturers have vent pipes for their products and quite possibly some of these might suit your purposes.

I refer you particularly to the Payne Furnace and Supply Co., Beverly Hills, Calif.

All that would be necessary for you to do to construct your own stack would be to set a pipe of such size as you desire into a cement foundation; cut a hole in it close to the base, into which would be set your line carrying surplus gases. Just above the inlet for such waste gases, you would install a gas pilot light. This pilot light would ignite the gases as they poured into your flue and would evidently solve your problem.—Ed.

•

Gentlemen:

For several years, we have carried public liability and employers' insurance with the American Employers' Insurance Co. Recently, we asked them if this covered our propane distribution, and they immediately advised us that it did not.

We cannot afford to be without insurance, and we have observed all the safety regulations recommended to us. We have a small 500 gallon storage tank from which we fill our own ICC cylinders which we then distribute to our customers.

If you can tell us the type of insurance we should carry, as well as give us the name of any reliable company writing such insurance, it would be very much appreciated.

S. H.

New Mexico

The Clarence E. Cooper Co., New York City, is recommended for this class of business by the Liquefied Petroleum Gas Association.

There are a few other companies in the country which write liability insurance for LP-Gas dealers but they are not very numerous. The reason for this is that while our industry has a fine safety record, it requires a special insurance coverage and only those firms which have enough LP-Gas accounts to justify them specializing in this class of business are interested in writing coverage for butane and propane dealers.—Ed.

•

Gentlemen:

I will endeavor to do the best I can to give you the substance of what I said verbally at the LPGA convention in Denver about dealers retaining ownership of consumer systems. This may be controversial but it is a matter that cannot be handled in any other manner.

The main reason equipment should be leased is so that the dealer has control of it and can keep it in proper repair and condition at all times. If the equipment is sold indiscriminately, there is no one who will be interested enough to look after it and keep it in constant repair. And the gas should not be handled by an inexperienced person in the business.

The sale may be easier to make and the consumer more easily placed on your list by an out-right sale of equipment, but when you make a sale in this manner you immediately put the equipment beyond your reach or

control and the buyer can do as he pleases with it. I find that when equipment is sold out-right, the dealer has to furnish the gas or lose the business, regardless of the type of equipment that is used.

The industry now has too many cylinders owned by everyone excepting the proper parties that should carry title to them; if we continue selling the cylinders and equipments we will be run into a "milk bottle" business and the cylinders will be shipped everywhere with no one really taking an interest in them, which is not protecting the customer in any manner. If the cylinders and equipments are owned by the company, and the customers are either serviced direct or through dealers, then you may have insurance to properly protect both yourself and customer.

If they are sold out-right there is a doubt as to the insurable interest the dealer has. If you lease the equipment and own the cylinders there is no question about having an insurable interest.

L. R. Forsyth, President
Omaha Blaugas Company
Omaha, Nebraska

The above opinion is that of a dealer and distributor long identified with the liquefied petroleum gas industry.

We would be interested in hearing the views of other dealers and what they think is the best method of handling equipment.

Experiences and opinions upon this subject will be published in this column.—Ed.

●

Gentlemen:

We have secured an order for the following:

A 12 horse power high pressure gas fired boiler to make steam for a sterilization and pasteurization outfit.

This boiler must be complete with injectors, gages, and burner for propane bottled gas. We will need 150 pounds steady pressure.

We would appreciate your advising us where we could purchase an outfit of this particular description.

S. A. T.
Massachusetts

I can give you the following two names of firms which manufacture boilers such as you indicate. They are: Downingtown Iron Works, Downingtown, Pa., and Eclipse Fuel Engineering Co., Rockford, Ill.—Ed.

●

Gentlemen:

We have been informed there is testing equipment available whereby the vapor can be checked in a post-hole that is dug adjacent to an underground tank to determine if the tank is leaking.

We will appreciate receiving the manufacturer's name and address if such equipment is made.

G. H.
Kansas

Several firms make this class of equipment, among them Solar Aircraft Corp., of San Diego, Calif.; the Bullard Co., and the Refinery Supply Co. of Tulsa, who will probably have some of these in stock.—Ed.

●

Gentlemen:

We are interested in obtaining reprints of certain articles which appear under the topic of "Current Reading" in the August, 1944, issue of Butane-Propane News.

We will, therefore, appreciate your furnishing us with one reprint of each article, if they are available.

E. D.
Louisiana

The references made in the "Current Reading" department are to articles of interest to our readers appearing in other current magazines. We do not have copies of the magazines for distribution or sale. To obtain them it will be necessary for you to write to the various publication offices, whose addresses we can give upon request.—Ed.

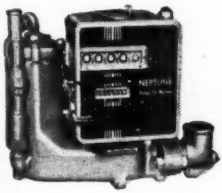
●

● **BUTANE-PROPANE** *News* **welcomes letters from our readers, but it must be understood that this magazine does not necessarily concur in opinions expressed.—Editor.**

WATCHMAN WITHOUT WAGES...

That's what Neptune LP-Gas Metering gives you: a watchman on every loading rack and every tank truck. These dependable Red Seal Meters work without pay—accurately measure every gallon you handle. They speed up truck loading and delivery operations; they wipe out losses due to over-measure; they enable you to uncover and correct leak-losses faster; they encourage workers to handle your LP-Gas more carefully; they help build good-will.

Summing it all up Neptune Red Seal Meters guard your product investment—act as watchmen that help you control costs and increase profits. Bulletin 779 contains complete data about these reliable Neptune LP-Gas Meters. Write for your copy today.



Neptune Red Seal LP-Gas Meters accurately meter butane or butane-propane mixtures. Patented "change gear shifter" makes calibration easy. Long-life measuring chamber has only *one* moving part. 1¼ inch Compact Type 1D meter shown at left is equipped with Print-O-Meter Register that prints delivery tickets. Other register types available.

RED SEAL METERS

N-48B-44

NEPTUNE

NEPTUNE METER COMPANY
50 West 50th Street New York 20, N. Y.

Branches: **Atlanta, Boston, Chicago, Dallas, Denver, Kansas City, Mo., Los Angeles, Louisville, Philadelphia, Portland, Ore., San Francisco, and Long Branch, Ontario.**

Plan Boldly for Sales

By LOUIS RUTHENBURG

President, Servel, Inc., Evansville, Ind.

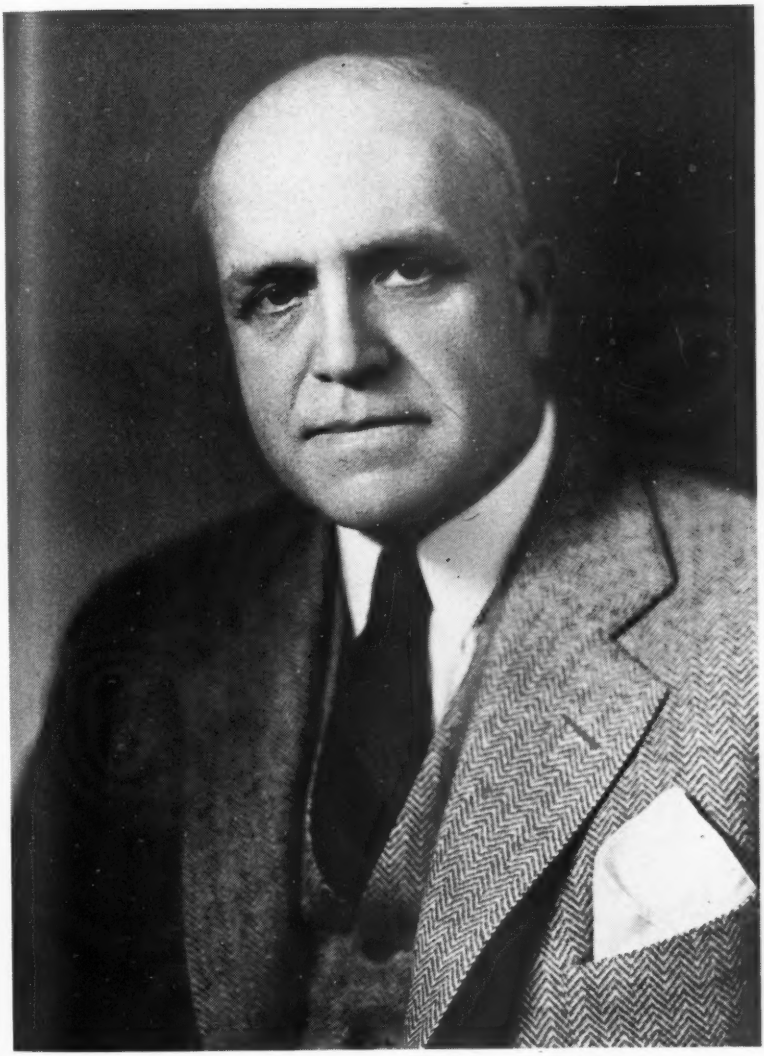
PEOPLE who live in rural areas have long shown a strong interest in obtaining for themselves the important conveniences and luxuries enjoyed by their city cousins. The high levels of wartime farm income; the prospects of continued farm prosperity; the rural, non-farm, new home construction; the delayed buying, and the wartime elevation of living standards will all add momentum to the trend.

Immediately following the easing of restrictions on the manufacture and distribution of civilian products, a large pent-up demand will be released and Americans with wartimes savings at hand will be in the market for all things they have been denied during the war years.

Because this demand will be large, there is every reason to expect that competition for it will be keen. We know that rural electrification interests will be armed to the hilt for an all-out fight to get that business. Those of us in the LP-Gas business will get our share only if we are properly prepared for the job ahead. We will be properly prepared only if we have done the kind of positive and bold planning which the times require.

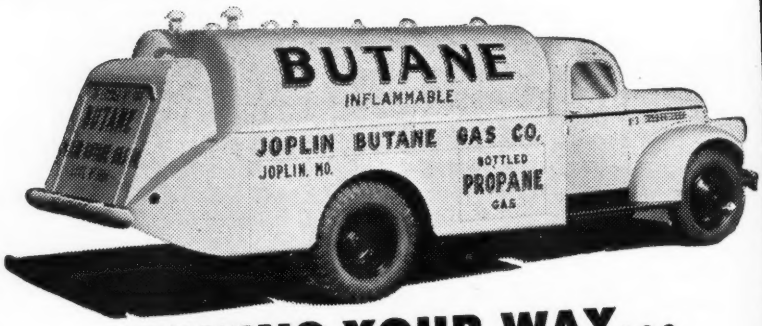
We should look to the postwar years with an interest over and beyond our own business growth. As many sales executives have pointed out in the last year, postwar planning will be effective only if the American people have the money to buy with and the courage to buy. The man with the courage to buy is the one who has a regular job. Therefore, looking at our problem realistically, it boils down in terms of planning for our own business growth and thinking constructively toward the end of supplying more jobs for American workmen. Jobs will make customers not only for LP-Gas and LP-Gas appliances, but for every material or service that lends itself to a higher standard of living.

These conditions will not prevail if we find ourselves on the day for action with no more preparation than a desire for national prosperity. We must plan now and be prepared to act on a moment's notice. Only then will we be armed with the ammunition which will win a prosperous postwar era for all.



LOUIS RUTHENBURG

Guest Editor for December



COMING YOUR WAY...

With the war's end, local firms in many communities will begin to get their new Butler Butane truck tanks like the one above. The units are virtually mobile pipe lines coming your way to bring the conveniences of gas. Plan now to be among the first to enjoy the conveniences a Butler gas system will bring postwar.

1. Faster, cleaner cooking and baking.
2. Easier, quicker ironing.
3. Low-cost automatic refrigeration.
4. Bright, soft-lighting—wall or ceiling.
5. Healthful, clean, home heating.
6. Plentiful hot water.

A GREAT POSTWAR OPPORTUNITY

The distribution of Butane gas, home gas systems and appliances offers one of the most, if not the most, promising postwar business opportunities in communities beyond the city gas mains.

This is very definitely indicated by the response to advertisements, such as the one above, which we have carried in the farm journals all through the war years.

With truck tanks for the delivery of Butane gas, storage tanks for handling it in bulk and home gas systems—all made in Butler factories—forward looking business men can enter this field with a nominal investment capable of yielding remarkable returns.

BUTLER MFG. COMPANY, 7410 E. 13th St., Kansas City 3, Mo.

BUTLER BUILT

LIQUEFIED PETROLEUM GAS

HOME SYSTEMS, TRUCK AND TRAILER TRANSPORT TANKS AND BULK STORAGE TANKS

MAINLY BEYOND THE MAINS

By ELLIOTT TAYLOR, Washington Editor

No Closed Shop

We have so far been strongly partisan to the efforts of the Louisiana Liquefied Petroleum Gas Commission to raise the standards of LP-Gas operation in its state, and we believe that Director W. U. Moss has done an outstanding job of regulation, tempered with reason.

ELLIOTT TAYLOR

But now we are sorry to report that the Louisiana Commission has gotten itself off base and has just issued an order that can hardly be headed in any other direction than that of the supreme court.

For on Oct. 20 the Commission announced that, "All dealers selling and delivering liquefied petroleum gas to domestic consumers must install bulk storage at a minimum capacity of 15,000 gallons before permits will be issued for the year 1945." These permits are normally issued about March 1 for the year then current.

We appreciate that the Commission is trying to create a state of greater stability and responsibility on the part of butane dealers by requiring them to have adequate storage facilities to take care of their customers. We appreciate that the established and responsible element within the industry in that state would probably find the problem of irresponsible competition by shoe-string operators simplified for the time being by such a law.

But in spite of all this, we believe the ruling is bad, and we believe it can and should be successfully contested by the first dealer who either wants to stay in business without having a 15,000-gallon storage tank, or who wants to go into business without buying one.

Capricious, arbitrary, unjust and tending to deprive the operator of his property without due process of law, would be about the way the attorneys would start to describe this act of the Commission. But there are other and moral rights that transcend even those granted under the law.

Simple, elementary questions will inject themselves. Why 15,000 gallons? Ample storage for 100 customers within 50 miles of a refinery would not be a drop

in the bucket for 1000 customers five hundred miles from a refinery. Exactly how much storage capacity per customer is "ample"? Maybe the Louisiana Commissioners know, but no one else in the industry is likely to agree with them.

To those operators who are on the inside looking out, and who want to close the door on the little guy out at the gate, we can only say that no industry has ever made itself great by making it impossible for initiative and energy and a desire to serve to get a foothold, even with limited capital.

If every LP-Gas operator in business today had been obliged to erect a 15,000-gallon storage plant before he could set up shop, how many would there be in the industry?

As a matter of fact—you, personally—where would you be?

Regulation Problems

A correspondent has recently raised the question of whether our advocacy of closer cooperation between the natural gas department of the American Gas Association and the LP-Gas industry, as represented by the LPGA, might not tend to stamp the latter as an industry which should be brought under public utility regulation with laws similar to those governing city gas companies.

The answer to that, in our opinion, is simply that there aren't any states where LP-Gas is sold in which the utilities commissions aren't perfectly aware of the fact, and the reason they don't regulate the affairs of this industry is that their state laws are not drawn to permit of such regulation.

It is well to bear in mind that the regulation of LP-Gas as to practices and regulation as to rates are two entirely different things. There are many states in which regulations, largely interested in safety, have been passed and where state officials have been charged with their enforcement.

State laws are not passed because the state government is under the impression that LP-Gas is a public utility or because it just suddenly discovers that the industry exists. State laws have had their genesis in a good many instances in the realization on the part of responsible operators within the state that some curb had to be placed on the reckless and irresponsible element that was in a position to do irreparable damage to the industry in its headlong race for quick and easy profits.

We believe that the trend is toward state regulation of butane and propane practices, and we believe that the wisest policy for any industry group to follow is to work toward the end that whatever laws are passed affecting their industry will be good laws, beneficial to the public and to the industry alike, and not harmful restrictions serving no end other than to extend political

control into still another avenue of human endeavor.

The question of rate regulation is, of course, an entirely different matter, and one over which no states have been able to assume control.

The basis for rate regulation rests in the quasi-monopoly which guarantees a public utility a measure of freedom from competition. In return for this freedom, the utility agrees to keep its rates reasonable—and the regulatory body enforces the agreement by its rules.

It is well to remember, however, that where a contract is entered into, giving a dealer or a distributor a virtual monopoly on the gas service in a district, area or subdivision, he is operating on the verge of becoming a public utility, whether he calls himself that or not.

So long as the distribution and sale of butane and propane are in the hands of individual dealers, operating as they are in free competition with other fuels and with each other, we believe there is little danger of rate regulation in the industry. And should the unlikely day of rate regulation come, we are convinced that affiliation with the American Gas Association would have no bearing on the case at all.

The only question that stands between this same cooperation between these two gas associations is that, to date, no one in either group has taken the time and effort to work out the ways and means. For the doubtful honor of being most backward in developing cooperation between two major branches of the gas industry, the AGA and LPGA are running a dead heat.

Not LP-Gas

In spite of announcements to the contrary, there still seems to exist some public idea that the liquefied natural gas which burned with such disastrous results in the Cleveland fire was either propane or butane, or something "just the same as."

It is, therefore, very essential that everyone in the LP-Gas industry be correctly informed so that he may vigorously combat and deny this erroneous impression.

The gas that burned at Cleveland was pure methane, contained not a trace of either propane or butane, and in order to keep it in a liquid state it had to be stored at a temperaure of about 250° below zero, Fahrenheit. It was not stored at high pressure—only about 3 pounds per square inch—and the cylindrical tank which failed first, did not "blow up" in the usual sense. It developed a leak which allowed the liquid gas to run out, gasify, and ignite almost instantaneously in the air, giving the effect of an explosion. The intensity of the flame, caused by the tremendous volume of gas released and burning at one time, was what caused most of the damage and spread the fire over such a large area.

Propane Torches Dry Foundry Molds Faster

By PAUL R. MELCHERT
Chief Engineer, Liquefied Gas Corp., Seattle, Wash.

THE FOLLOWING is a brief account of our development of green sand mold drying with "Pro-Gas" (propane) which I believe will be of interest and value to the industry.

Some three years ago the writer, observing the rather crude methods of mold drying with diesel torches, designed and developed a new type of torch for propane for this service—which was tried out in several of our foundries in western Washington. The foundry superintendents, being very much interested,

AMONG the many foundry processes which have been improved upon in the past two or three years there is none more outstanding than that which resulted in the development of a new type of torch for green sand mold drying. This torch, designed and developed by Paul Melchert, of Liquefied Gas Corp., Seattle, uses for its fuel, propane gas, and is now in use in numerous foundries in the Pacific Northwest.

Mr. Melchert felt the necessity for a torch of this nature after personally observing the rather crude methods of mold drying with diesel torches which were current at the time. He discussed the matter with various foundry superintendents, outlining what he had in mind, and found them so much interested that they helped materially in developing the finished torch. —Editor.

▲

4-torch units for large molds, taken in plant of Sumner Iron works, Everett, Wash.

▼

helped materially in developing the finished torch (see Figs. 1 and 2).

Every foundry in the Northwest (some 28 in our field), is using from three to 40 of these torches in the various plants.

The larger foundries have above ground bulk storage tanks and have piped to the various stations where they connect with ¼-in. propane hoses of various lengths to the torch. In the smaller foundries we supply 200 lb. ICC cylinders. The hook-up is as follows: We manifold two 200 lb. cylinders together, use a single stage regulator to reduce the pressure to 15 to 20 lbs. (which is the pressure we use at the torch), and make connection with 50-ft. of propane hose (¼-in.-225 lb. W.P.).

This is the operation: Gas pressure 15 to 20 lbs., air pressure 90 to 100 lbs. The torches are lighted with a match or friction lighter. The flame is then applied to the mold, and when the mold is thoroughly heated up, the air is increased to produce a blue base flame with a lavender tip (maximum combined efficiency) and the drying is completed to the desired depth.

Evidence of the advantages of propane for drying molds is found in a statement by Frank C. Rogers, superintendent, Olympic Steel Works, Seattle. He states that the

▲

Single torch operation in drying out molds. Paul Melchert in center.

▼

time involved in drying to a certain depth has been greatly reduced. The surface of the mold seems to assume a greater hardness than before when using an oil torch.

Also, the surface of the mold is clean and free from the soot which resulted from the use of the oil torch. Naturally, its use is favored by the men because of the shorter time required to dry large molds. He feels, however, that the use of propane by itself without additional compressed air does not have any marked advantage.

Mr. Rogers adds that, "It has been impossible for us to carry through any cost data on either type of drying, and so from the economic standpoint of actual cost, we cannot give any results. Just from casual observation, we believe it is at least as cheap and perhaps a little cheaper than the old type diesel torch."

PAW Shuts Down on New Butane Installations

INCREASED military requirements for 100-octane gasoline, of which butane is the most important ingredient, have compelled the Petroleum Administration for War to shut down on any further expansion of butane installations at this time.

This word comes to BUTANE-PROPANE *News* by wire from Paul K. Thompson, Chief of the Liquefied Petroleum Gas Section, of the Natural Gas and Natural Gasoline Division, PAW, under date of Nov. 24. Orders, P. 55, of earlier date.

The telegram follows:

"Effective immediately, the Petroleum Administration for War will be compelled to disapprove applications to install equipment burning butane or propane-butane mixture, Deputy Petroleum Administrator Ralph K. Davies said today.

"Restriction of further increase in consumption of these liquefied petroleum gases, which are commonly used for cooking and heating in the southern, southwestern, and Pacific Coast states, is necessary to meet increased military requirements for 100-octane aviation gasoline, Mr. Davies said.

"The deputy administrator explained that butane and butane-propane mixtures are liquefied petroleum gases that are commonly known under various trade names or as LP-Gas, bottled gas and tank gas. These gases are used extensively as industrial fuels and as domestic fuels in homes beyond

JAS. E. PEW
Director, Natural Gasoline Division

P. K. THOMPSON
Chief, LP-Gas Section, PAW

the reach of gas mains. Butane is an important component in the manufacture of aviation gasoline.

"Prior to today's announced change of policy, a few civilian consumers of butane or butane-propane mixtures were permitted to install LP-Gas equipment in their homes or to transfer equipment from one home to another by obtaining PAW approval under War Production Board limitation order L-86, which controls the use of liquefied petroleum gas-burning equipment. WPB Form 809 is used in filing for such approval, which heretofore had been granted in certain instances because stocks were sufficient to permit small increases in consumption.

"Now, however, stocks of these liquefied petroleum gases are very tight, Mr. Davies said. Consequently, it has been necessary for PAW to restrict further increases in consumption of these important ingredients of aviation gasoline.

"Mr. Davies pointed out that today's change in policy will not affect consumers who have already installed equipment in their homes or in industrial plants, but he advised consumers to conserve LP-Gas as much as possible to protect the stocks on hand.

"The following conservation measures are recommended:

"1. Do not use kitchen ovens to heat the house.

"2. Use hot water as little as possible. Do not use running hot water to wash dishes or hands. Heat and use no more water than is necessary.

"3. In house heating, close off all unused rooms.

"4. Use the fireplace to heat rooms whenever possible.

"5. Storm windows and storm doors should be used to prevent the escape of heat through glass.

"6. Attic floors should be insulated with mineral wool or similar material.

"7. Where possible, the outside walls of homes should be insulated.

"8. Windows and doors should be weather-stripped and caulked to cut out drafts."

C. M. Ambrose, Seattle Distributor, Died Oct. 1

C. M. Ambrose, president of Liquefied Gas Corp., Seattle, and a leader in the LP-Gas industry in the Northwest, died unexpectedly in Bay City, Mich., Oct. 30, according to word received from his son, C. M. Ambrose, Jr.

Mr. Ambrose has been prominent in the liquefied petroleum gas industry since moving to Seattle several years ago. He was the vice chairman of the Pacific Coast Section, LPGA, and was on the Industry Committee of the Petroleum Administration for War. He had great faith in the future of the LP-Gas industry in the Northwest and has been branching out extensively for some time past.

LP-Gas Burner Design

Burner Ports, Flame Characteristics, Mixing Tubes

By F. E. VANDAVEER

Assistant Director, American Gas Association Testing Laboratories, Cleveland, Ohio

Part 2*

Flame Characteristics. In the successful design of a new burner and its application in an appliance, it is essential that characteristics of the resultant flame be known. The flame height of both inner cone and outer mantle must be closely estimated in order to avoid flame impingement on heating surfaces to such an extent that incomplete combustion may result. Tendency of flames of many types of fuel gases to lift from the ports should be so thoroughly known that this condition will not be obtained with resulting incomplete combustion and slow ignition. Possibilities for appearance of yellow tips must be accurately predicted so that ample primary air can be provided and deposition of carbon and incomplete combustion can be avoided. Flashback of flame with resultant undesirable production of unburned gases and damage to burner cannot be tolerated.

F. E. VANDAVEER

As a result of publication of data in Bulletins Nos. 10 and 13, these flame characteristics for a given burner can be predicted. In the preceding section on burner ports, two other flame characteristics, namely, lifting and yellow tipping for many variations in burner design, as well as for both propane and butane gases, were discussed and need not be repeated. Other interesting and important advances

ABSTRACT

Following a general resume of American Gas Association research on atmospheric gas burners including published bulletins and current projects, the most important items of burner port design relating to liquefied petroleum gases are presented. Effect of drilled port size, port depth, port spacing, ribbon and slotted ports and fuel gases on burner performance as well as a new formula for calculating flow of air-gas mixture through ports is given. New mathematical formulae for calculating flame characteristics of inner cone and outer mantle flame height are discussed. Port design to prevent flash-back is summarized. Generally accepted dimensional limits for mixing tube design for good primary air injection as well as some interesting research in new directions are briefly reviewed.

*PART 1 appeared in the September issue of BUTANE-PROPANE News, p. 17.

relate to flame height and flashback characteristics.

1. *Height of Inner Cone.* After measurements of inner cone height had been made for a large number of conditions on manufactured, natural and butane gases, it was possible to plot height in inches per 10,000 Btu. per hr. per sq. in. of port area against per cent primary air for those gases and for different port sizes.

Other factors such as port spacing and port depth have a slight effect on inner cone height but not to such an extent that they need be considered. One series of such curves on butane gas is shown in Fig. 5 for port sizes from No. 46 D.M.S. to ¼ in. It will be observed that inner cone height for a No. 46 port did not vary appreciably with primary air variation, whereas the ¼ in. diameter port caused a decrease in flame height from .65 to .28

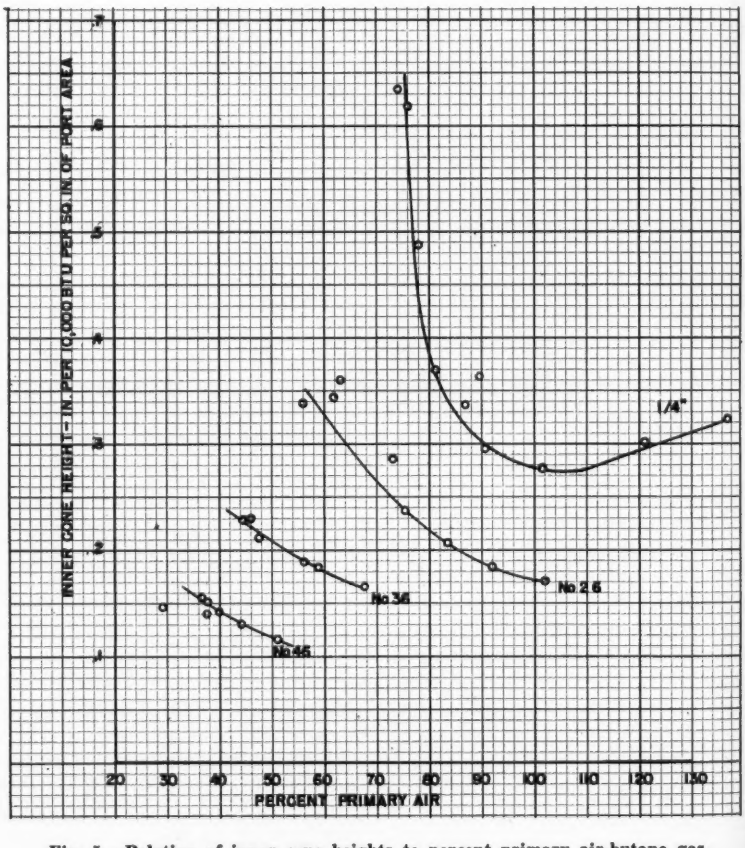


Fig. 5.—Relation of inner cone heights to percent primary air-butane gas.

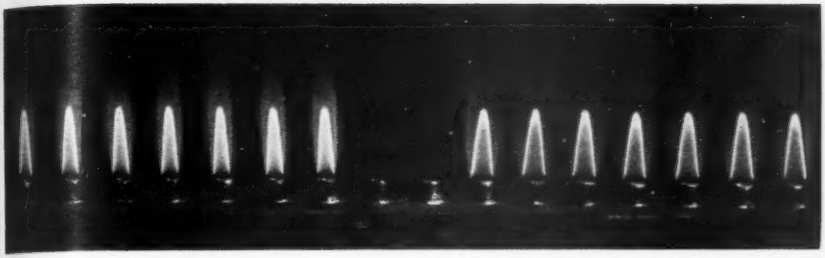


Fig. 6.—Photograph showing that for a given rate per port inner cone flame height is unaffected by port size. No. 36 D.M.S. ports at left. No. 26 D.M.S. ports at right. Same gas rate per port and same primary air.

in., with 76 to 102% variation in primary air and then increased to .32 in., with further increase in primary air to 138%.

Another interesting comparison of inner cone flame height is shown in Fig. 6 wherein for a given rate per port inner cone flame height is unaffected by port size.

It was possible from the data obtained to develop the following mathematical equation, thus providing gas burner designers for the first time with a rapid means of calculating inner cone height of a new burner:

$$h = K\ a\ R$$

where:

h = height of inner cone, inches.

a = area of port, square inches.

K = constant depending on primary air and fuel.

R = gas rate, in 10,000 Btu. per hr. per sq. in. of port area.

2. *Height of Outer Mantle of Flame.* Measurement of height of the outer mantle of a flame is not as precise as for the inner cone, as this mantle is not stable, is affected by air currents and has a tendency to flicker as yellow tips are approached. By making a good average outer mantle height measurement, reasonably consistent results were obtained.

Typical curves of outer mantle flame height with butane gas are shown in Fig. 7. Manufactured and natural gas give similar curves with different values for flame height. These curves show clearly that as port size is increased, flame height is materially increased for a given gas input per unit of port area. It was also found that there is an appreciable increase in flame height from manufactured to natural to butane gas. This is charted in Bulletin No. 13.

Furthermore, for all practical purposes, outer mantle height is independent of primary aeration for port sizes of No. 26 D.M.S. and smaller. This is illustrated in Fig. 8. It is also shown in Fig. 9 that outer mantle flame height for two rows of ports is twice that for a single row. In Fig. 10 the effect of port spacing on outer mantle height is shown. Flame height greatly increased as port spacing was decreased from 0.5 in. to .05 in.

Based on the voluminous data obtained, it was found that height of the outer mantle of flame followed the empirical relationship:

$$h_o = \frac{S\ a\ R}{\sqrt{d}}$$

where:

h_o = outer mantle height in inches.

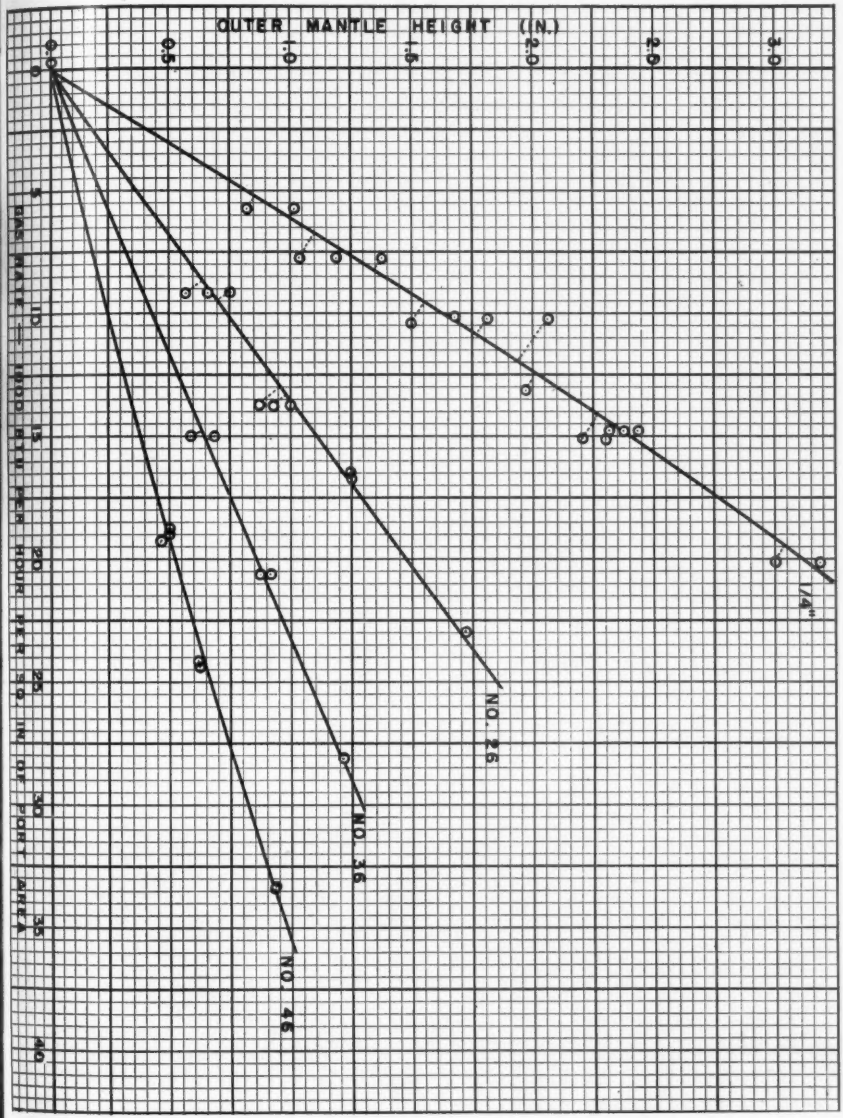


Fig. 7.—Height of outer mantel of flame of butane gas for various input ratings and port sizes.

COME DOWN TO PLAYLAND

★ Most everyone who is thinking of building or buying a new home has two "musts" on his list . . . *modern heating and a modern recreation room.*

We are telling these enthusiastic planners through national advertising that one way to make certain of both is to have Bryant gas heating. Taking little space, maintaining a clean, warm, healthy atmosphere, Bryant heating equipment helps make the basement another room in which to live.

People in *your* neighborhood read of Bryant advantages, are ready to place reservation orders when you call and help them select the proper units . . . will continue as even better gas customers for you. Keep calling on them . . . keep selling Bryant! *The Bryant Heater Company, 17825 St. Clair Ave., Cleveland 10, Ohio* . . . One of the Dresser Industries.

bryant
GAS
HEATING

Let the pup be furnace man

S = constant for all port sizes, No. 26 D.M.S. and smaller and for different percentages of primary air with a given port spacing and fuel gas.

a = area of a single port, square inches.

R = gas rate, in 10,000 Btu. per hr. per sq. in. of port area.

d = diameter of port in inches.

Thus it is possible from this equation and data supplied in Bulletin No. 13 to calculate in advance the height of the outer flame mantle of a projected burner. This is not only a great scientific achievement but will have much practical application in design of gas burners.

3. *Flash-back.* Flame will flash back through a port when the velocity of air-gas mixture flow through it is reduced below speed of flame propagation at any point in the flame surface. Tendency to flash back varies with type of fuel gas, port size, port depth, primary air, gas input rating, and temperature of ports as well as air-gas mixture. Flash-back may also be caused by excessive down draft on the flame. A leaking manual or automatic burner valve permitting a small gas flow which is insufficient to maintain combustion at burner ports is one of the most serious hazards in causing flash-back. In burner operation, flash-back is to be avoided at all times. Most undesirable results of flash-back are the generation of products of incomplete combustion, sooting or clogging of interior of burners and orifices, and damage due to overheating of burners.

Propensity of flames to flash back is directly proportional to ignition velocity of fuel gases; the greater the ignition velocity the greater the tendency to flash back. Therefore, gases high in hydrogen and carbon monoxide (the manufactured gases) will have far greater flash-back tendencies than hydrocarbon gases such as natural or liquefied petroleum gases. Flash-back tendencies also vary with percentages of primary air supplied, generally increasing as the primary air is increased.

Whether the material from which ports are formed is a good conductor of heat (metals) or resistant to heat flow (ceramics) also seems to affect flash-back, tendency being less pronounced for ceramic materials than for metals.

With drilled ports, flash-back may be controlled by using the proper size and depth of port. These factors are interrelated. The deeper the port up

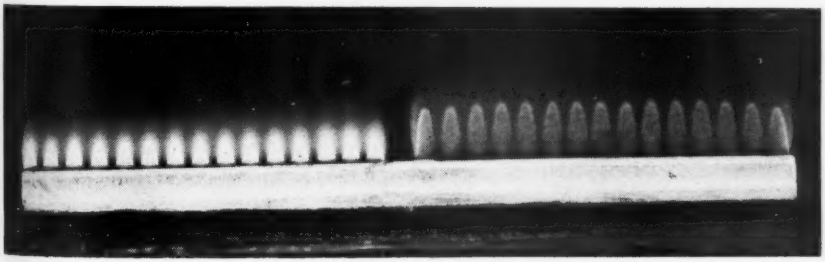


Fig. 8.—Illustrating that primary air has no appreciable effect on height of the outer mantle of a flame. Left and right halves of burner were adjusted at the same gas rate but with high percentage of primary air at left and low percentage at right. Outer mantle heights are equal.

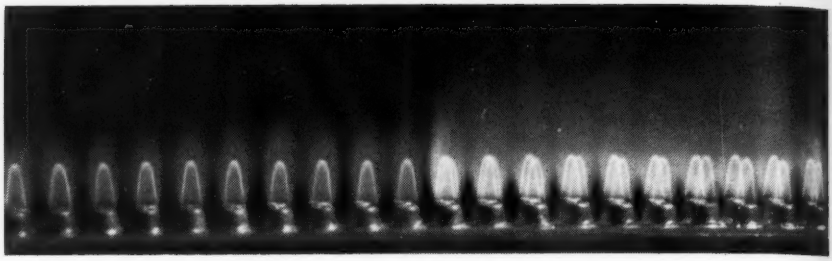


Fig. 9.—Illustrating that outer mantle flame height on two rows of ports at right is twice the height of flames on single row of ports at left.

to approximately ⅜ in., the larger the size that may be used without danger of flames flashing through it. Flash-back is first realized near the edge of the port since the mixture velocity at that point is considerably less than the average velocity through it.

For this reason, poor drilling off center of a raised port section causing one edge of the port to be much more shallow than the rest, or an out-of-round port, will provide a point of decreased velocity and a source for flames to flash through the port. In smaller ports there may be less variation in mixture velocity across the port and apparently flames have a lesser tendency to flash back for this reason.

Flash-back occurs at higher gas input ratings for larger ports and over a wider range of primary aeration. A No. 36 D.M.S. port is considered the largest size that may be used to avoid difficulty from flash-back with a fast-burning manufactured gas. On some manufactured gases a No. 38 port or smaller is preferred. On natural and liquefied petroleum gases considerably larger ports, Nos. 30-32, may be used without danger of flash-back.

Mixing Tubes. Maximum gas burning capacity of a burner depends to a large extent on primary air injection and satisfactory performance can be obtained only when the gas input rate and primary air injecting ability of a burner are properly correlated. The primary air injecting power of a burner is dependent on several factors includ-

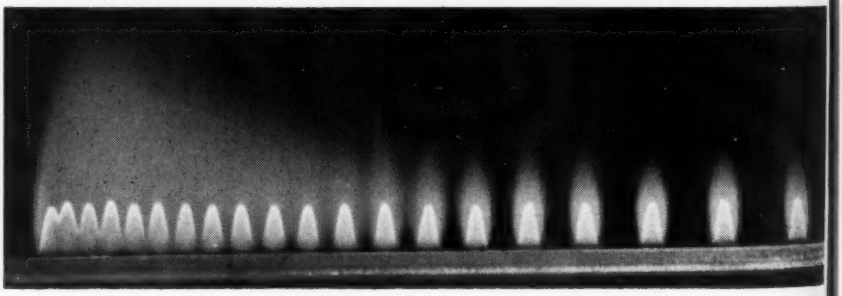
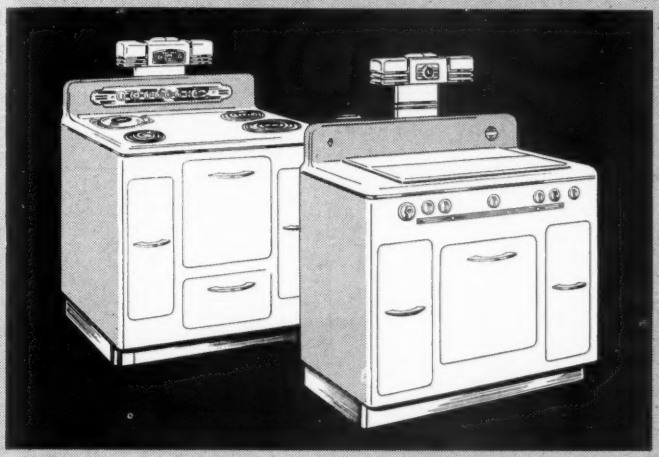


Fig. 10.—Illustrating effect of port spacing on outer mantle flame height. Port spacing increased from 0.05 in. at left to 0.5 in. at right.



Yes, some Ranges are being made this year!

GOOD NEWS travels fast — and often becomes somewhat "inflated" as it is passed along. It's human nature to express our hopes as though they were facts.

As a matter of fact, the War Production Board has permitted the manufacture of a very limited number of gas and electric ranges *where it will not interfere with the production of materials needed for war.* The ranges to be made will be *far fewer* than most people expect or than are needed. Further, the difficulty of getting necessary raw materials will slow down and curtail civilian production even more. Don't expect too much too soon! Here at Lindemann & Hoverson, production of vitally essential war goods comes first — and it will as long as we have a war to win. This same condition exists in many large plants normally making products similar to those carrying the L & H trademark. So this is a plea for your patience and understanding. We know that you, too, put the winning of the war above all else — so that your boys and ours may come back sooner to peace and prosperity. As the manufacture of civilian goods increases, L & H will produce its share.

A. J. Lindemann & Hoverson Co.

MILWAUKEE 7, *Since 1873* • WISCONSIN

KEROGAS MANUFACTURERS OF ELECTRIC RANGES ELECTRIC WATER HEATERS GAS RANGES.. OIL STOVES.. PORTABLE OVENS OIL HEATERS...WICKS ALCAZAR

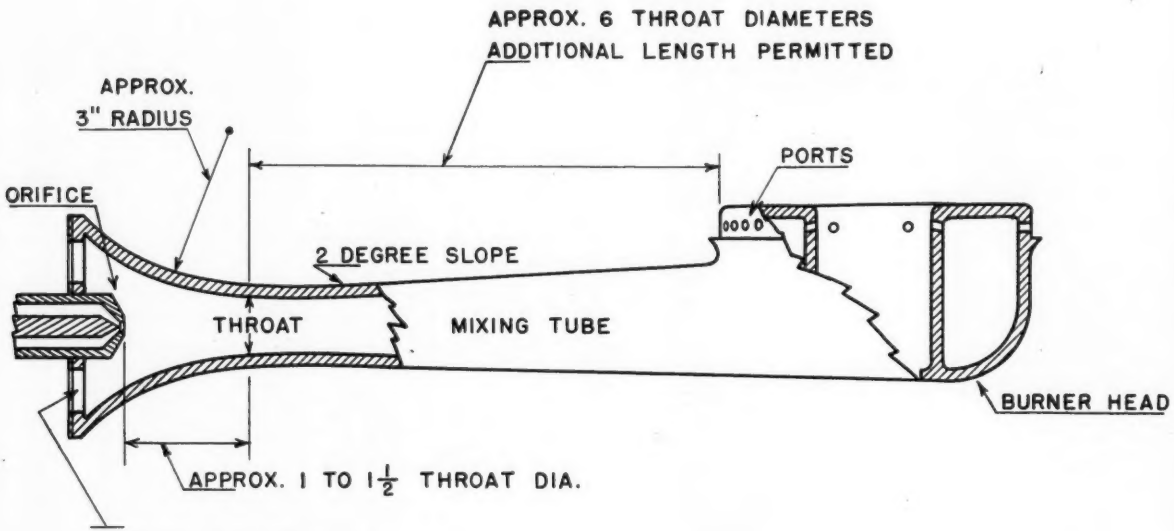


Fig. 11.—Generally accepted principles of design of atmospheric gas burners.

Armstrong

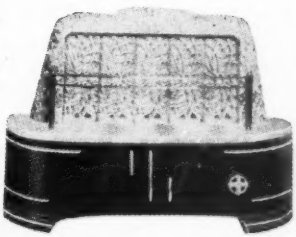
QUALITY SINCE 1899

Our plant facilities have been devoted largely to making war goods, but now we are prepared to swing back into peacetime production of Armstrong Products.

NO. 10-C BATHROOM HEATER

A big seller. One-piece body finished in porcelain enamel. Cast iron burner equipped with adjustable air mixers. Reversible burner connection 14½" high, 5⅝" deep, 11" wide. Comes in white with black lines.

☆

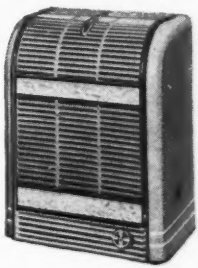


NO. 690—RADIANT HEATER

An attractive design that will look well in any room. Finished in chocolate brown vitreous enamel with light tan trim. 17¾" high. Comes in 20,000 or 24,000 B.T.U.

NO. 900—CIRCULATING-RADIANT HEATER

An exclusive Armstrong model, designed for proper combustion to produce both radiant and circulating heat. No disagreeable odors. Brown porcelain enamel finish. 19" high. Available in 18,000 or 28,000 B.T.U.



ARMSTRONG PRODUCTS CORP.

Dept. BP, Huntington, W. Va.

Fig. 11.—Generally accepted principles of design of atmospheric gas burners.

ing the fuel gas used, the design of the mixing tube, relation of mixing tube to gas orifice, burner head temperatures, and combustion chamber pressure.

Ability of different fuel gases to inject primary air when supplied to a burner at the same input rate is theoretically directly proportional to the square root of the product of the specific gravity and the pressure at which each is supplied and inversely proportional to the heating value of the gas. It can be shown by calculation that coke oven gas, even at a pressure of 3½ in. water column, has somewhat greater air injecting ability than natural gas at 7 in. pressure and an even greater difference exists between natural and butane gases at their respective normal distribution pressures of 7 in. and 11 in. The design of burners for adequate primary air injection, therefore, is more difficult for natural and liquefied petroleum gases than for manufactured gases.

Generally accepted dimensional limits for domestic gas appliance burners for good primary air injection are illustrated in Fig. 11. Information secured from research conducted at our Laboratories and at the Bureau of Standards has been condensed in this illustration in such a way as to show the length and slope of mixing tube, throat area ratio to port area for smooth and rough mixers, proper distance between orifice and throat, and size of primary openings for good burner operation.

In addition to the above design characteristics, it is essential that temperature of the burner be kept as low as possible for good air injection. It has been shown for example that a reduction of from 2 to 8% of the air theoretically needed for complete combustion could be generally expected for each 500°F. change in burner head temperature or in the temperature of the mixer tube. Greater reduction in air injection occurs in burners having long or small diameter mixing tubes than those having greater diameter or shorter tube lengths.

Variation in combustion chamber pressure also affects primary air injection, decreasing as the combustion chamber pressure is increased above atmospheric and increasing as the chamber pressure is decreased below atmospheric. The magnitude of this effect was found to be greater as the air shutter opening was increased and smaller as the gas rate was increased. The ordinary range of pressure established in the combustion chamber of domestic appliances, seldom if ever, is greater than .005 in. water column. Within the range of ±.005 in. combustion chamber pressure, no significant changes will take place in the per cent of primary air injected.

It is a generally known fact that some of the recommended proportions and dimensions for acceptable burner design as shown in Fig. 11 can be modified very appreciably without greatly impairing primary air injection. Mixing tube lengths as short as 1 to 2 times the throat diameter have been used on A.G.A. approved appliances successfully.

Likewise, considerable variation

in the distance between orifice and throat can be tolerated and successful operation attained with the orifice located either in the throat of the mixing tube or a short distance on the outlet side rather than on the inlet. Questions have been raised about the necessity for a 2° slope of the mixing tube. There are also good possibilities for using means other than the usual type of air shutter for regulating and controlling the primary air entrained into a burner. In other words, our present design figures for domestic gas burner mixing tubes are so flexible they may be questioned as to accuracy.

Additional research has accordingly been undertaken by the Committee on Domestic Gas Research on mixing tube design at the American Gas Association Testing Laboratories. While considerable progress has been made to date, final conclusions have not been reached.

Research Still Continues

It is expected that the results of this research will reveal more accurate methods for calculating the proper length of mixing tubes and for establishing the proper slope from throat to burner head, settle the question as to whether an orifice should be located on the throat inlet or outlet, and determine in general the relative value of venturi tubes as compared to straight tubes.

It is further anticipated that from the more practical point of view, this additional study may permit better design of burners to the extent of possibly more correct sizing of mixer tubes with a resultant decrease in expense of manufacture. There is also the need for specific information covering the design of practical burners injecting all air for combustion as primary air.

While it would easily be possible to obtain sufficient energy in the liquefied petroleum gas stream at some appropriate pressure higher than the present generally used normal pressure to inject adequate primary air for complete combustion, so far no practical design has been developed. This new research work, therefore, on mixing tubes, should throw light on this problem as well as to provide more accurate design data on burners of contemporary atmospheric type.

Mexican Order Bans Charcoal, Brings Demand for Gas Ranges

Total allocations to the Foreign Economic Administration for cooking stoves of the gas type by the War Production Board are now at the rate of 16,000 a year. This allocation includes lend-lease, relief and for commercial use.

With a total production in this country for this year at a figure of 500,000 or better, to include both the Victory model and the standard type, the allocations for export amount to slightly over three per cent.

In the past, shipments to Mexico have been mostly coal and wood stoves. Recently, however, the government issued an order forbidding the use of charcoal for cooking and the demand switched almost overnight to the gas range type, which presumably will be operated with bottled gas.

LP-Gas Men Win Rail Rate Case

A DECISION favoring liquefied petroleum gas companies in several Southern states was handed down Oct. 11 by the Interstate Commerce Commission. The case involves the matter of lower rail freight rates on shipments of LP-Gas by railroads serving the South, the petitioners being Green's Fuel, Inc., Sarasota, Fla.; United Cities Utilities Co., Chicago; Weis Butane Gas Co., Wheatley, Ark.; General Gas Corp., Baton Rouge, La.; National Butane Gas Co. of Alabama, Inc., Mobile, Ala., and Georgia Butane Gas Co., Sandersville, Ga.

K. H. KOACH

K. H. Koach, vice president of Green's Fuel, Inc., has had the active leadership of the long legal battle, the result of which will now save the LP-Gas industry in the South considerable money.

A statement released by Mr. Koach says, in part:

"The Commission found that the proposed rates were unreasonable and that reasonable rates for the future would be rates which have been prescribed by the Commission as reasonable maximum rates for application to refined petroleum products.

"The result of all this is that the decision of the Commission indicates a sweeping victory for all the industry except possibly those members who are located at points which have heretofore enjoyed a reduction in rates. As to the latter, their rates may be put back where they were before such reduction but will apply to an estimated weight of 4.7 instead of 6.6 pounds per gallon.

"May we call your attention to the possibility that the railroads will file a petition for rehearing and reconsideration by the entire Commission, in which event your Rate Case Committee will have to make reply. Should the rehearing be granted by the Commission, we will be forced to present our argument once more—this time before the entire Commission. In the meantime, we feel that your committee, through its very competent legal counsel, has succeeded in its efforts to obtain a fair and just basis for the computation of transportation charges as related to liquefied petroleum gas tankcar shipments.

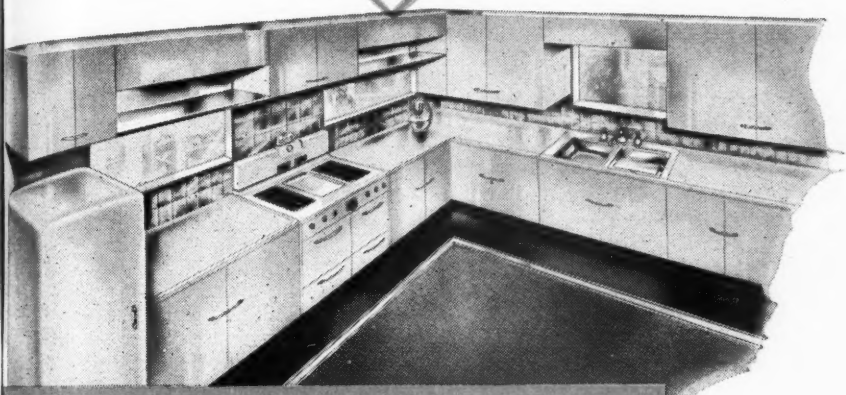
"We trust that the Commission will refuse to grant the Carriers a rehearing and that the decision just handed down will represent the final chapter in this litigation but you will, of course, be kept advised of any further developments."

Butane Gas Company Bought Out in East

Purchase of the physical properties of the Eastern Butane Gas Corp. of New Bern, N. C., by the Southern Butane Gas Corp. of Jacksonville was announced in October.

The transaction will give the Jacksonville concern practically all of eastern North Carolina as territory, stretching from the South Carolina to the Virginia lines and as far west as Lumberton and Goldsboro.

Magic Chef Ranges... the **HEART** *of modern gas kitchens...*



Kitchens like this...

will help sell Gas Appliances

We're not selling complete kitchens. But here is an idea for the kind of postwar kitchen that millions of home-makers are dreaming of. It's a practical dream kitchen that can come true just as soon as appliances are again available. It's the type of kitchen that will help you make future sales of gas appliances.

The heart of this kitchen is a Magic Chef gas range—the range that's preferred by American home-makers. This preference, built by many years of unparalleled performance and consistent national advertising, has made Magic Chef the magic name in ranges.

Magic Chef advertising in leading national magazines is working for you month by month. It's maintaining Magic Chef's outstanding preference and paving the way for sales in the future.

AMERICAN STOVE COMPANY
4901 Perkins Avenue • Cleveland, Ohio
New York • Philadelphia • Cleveland
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Awarded to Quick Meal Stove Co. Division of American Stove Co.

Magic Chef

RED WHEEL GAS RANGES AND HEAVY DUTY GAS COOKING EQUIPMENT

Costs and Equipment in New England Restaurants Analyzed

By C. C. TURNER
Special Representative,
Butane-Propane News

LET US visit a few of the commercial eating establishments about which we have been talking in previous chapters of this series. They will not be the largest ones, but they are typical in their particular fields. As we go along I shall point out instances where they might be improved, and I trust that those proprietors who have taken me into their confidence will not take offense.

From 24,000 to 28,000 men and women fabricate ships at the great East and West yards of the New England Shipbuilding Corp. at South Portland, Me. It is out-of-door work, down on the water front in a climate which one might call spicy with King Winter in control of the elements. The work requires men and women with rugged constitutions and this means hearty appetites. Many of these people bring their lunches with them, but thousands feel the need of a substantial warm meal.

To E. S. Barton, of Barton Associates, falls the duty of feeding them, and how he does it with the equipment which he has inherited I do not know, but he feeds them well at a price of from 55c to 70c per meal.

The New England Shipbuilding Corp. at South Portland was originally two companies sprawled over hundreds of acres. Identical cafeterias were built in the two yards, and they, in turn, supplied several canteens located at convenient places throughout what are now termed the East and West yards. All of the cooking for these canteens is done at the cafeterias. The cafeteria in the West Yard uses manufactured gas; that in the East Yard uses LP-Gas.

Serve 4,000 to 6,000 Meals Daily

Let us stop long enough to consider the East Yard cafeteria where LP-Gas is used. Here, under the efficient management of Mrs. Geneva Charles, 4,000 to 6,000 meals per day are prepared for consumption on the premise and at the canteens which it serves. Chef Ivan Smith must be a wizard to get them out with the inadequate equipment which he has.

The cafeteria equipment consists of:—

1 3-section closed-top Garland restaurant range operating on LP-Gas.

1 elevated broiler above-the-range using LP-Gas.

1 Pitman 4-burner, 2-basket LP-Gas "Frialator."

1 stock pot operating on building steam.

1 steam box for vegetables operating on building steam.

1 steam table heated by building steam.

2 coffee urns heated by building steam.

1 electric grill which is only occasionally used at breakfast time.

Toasting is done on the gas broiler because gas toasters were not available when the cafeteria was built. An LP-Gas bake oven has finally been procured and is in transit at the present time.

The cafeteria operates 24 hours each day, six days a week. It, and the canteens which it serves, employs about 50 people in three shifts which overlap at the hours of peak loads. The cafeteria bakes all of its own bread, pies, cakes, rolls, muffins and puddings, and roasts all of its meats in the three LP-Gas range ovens beneath the 3-section closed tops of the Garland gas range. Talk about getting maximum efficiency out of a cooking appliance!

There is never an hour, day or night, but what the ovens are crammed with pastries or roasts! Gas consumption is about 3,950 lbs. of propane per month. If a conservatively estimated average of only 4,000 meals are served daily for 6 days per week, there would be 104,000 meals served per month. Therefore, each meal requires but .0379 lbs. of propane.

It is to be noted that while building steam is used for many cooking operations in this cafeteria, the heavier loads of baking, roasting,

Cylinders of LP-Gas being delivered to the cafeteria of the East Yard of the New England Shipbuilding Corp., at South Portland, Me., by Billington's Inc., Portland, Me., Philgas dealers.

frying, broiling and top-of-the-stove cooking, fall upon LP-Gas. If we are charitable and allow steam a 50% break in the cooking of meals, then but .0758 lbs. of propane would be used to cook a meal if steam were eliminated and propane carried 100% of the load. What the cost of doing the entire job with propane would be can be judged from Table 1.

Naturally, I would like to see the entire cooking job handled at this cafeteria with LP-Gas. Central steam plants are sometimes forced to shut down but there is no interruption of LP-Gas service which cannot be quickly remedied. An electric grill has the unfortunate habit of occasionally burning out elements, and if you do not happen to have a replacement unit on hand you are in an awful mess.

Table 1. If 0.0758 Lbs. of Propane Were Used to Cook An Entire Meal

If the cost of propane were ¢ per lb.	*The cost per meal in ¢ would be*	*If the cost of propane were ¢ per lb.*	*The cost per meal in ¢ would be*
2c	0.1516c	8c	0.6064c
3c	0.2274c	9c	0.6822c
4c	0.3032c	10c	0.7580c
5c	0.3790c	11c	0.8338c
6c	0.4548c	12c	0.9096c
7c	0.5306c	13c	0.9854c

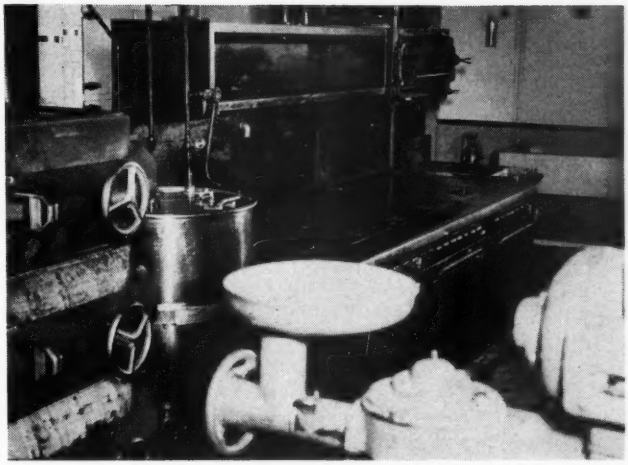
For a moment let us turn back to Chapter 2, Page 37, of the September, 1944, issue of BUTANE-PROPANE *News* in which we were told that cooking fuel could average 1½% of each dollar taken in, or of the meal price. If the average priced meal at this cafeteria is 60c, then the fuel cost per meal could be 60 × .015 = 0.9c. Consulting the above table it will be noted that Mr. Barton could pay almost 12c per lb. for fuel and still be in line on his fuel cost. Actually, less than half this amount is being paid.

This proves beyond any doubt that propane is an economical fuel on this particular mass feeding operation, and you can use these figures as proof in talking with your mass feeding prospects.

I have said that I would offer criticism on each job, so I will start with Mr. Barton's operation.

Cooking costs could be reduced and kitchen congestion relieved if modern baking and roasting ovens were installed and if the range ovens were held as standby units to relieve peak load conditions. Mr. Barton realizes all of these things, but I repeat, he has inherited the equipment which he has, and has to make the best of it. He is dealing with the Maritime Commission in such matters and under war conditions this commission is not so much concerned with costs as it is in getting the job done. Furthermore, as in all war activities, many people who had had no experience in a specialized field were concerned in the construction and equipping of this cafeteria.

The central heating plant could generate plenty of steam, so why not use it? Nobody thought of



These are the gas appliances upon which from 4000 to 6000 meals per day are prepared at the New England Shipbuilding Corp., South Portland, Me.

heat losses in long steam transmission lines or of relative fuel costs. Nobody considered the added confusion which would result in the event of a central plant shut-down. The advantages of diversified fuels did not occur to anyone.

In Lincoln, Me., in Washington county, there is a modest appearing hotel, which, from the exterior, does not differ from hundreds of other small, rural New England hotels, but its fame is widespread. The Lincoln House is owned and managed by genial Fred Kelley. Fred is the perfect host. His hotel is immaculate, even to the remotest corner of the cellar. I have seen Fred go down there and wipe his hand across the top of a steam pipe. If there was any dust there, Fred spoke to someone about it in his nice, quiet way.

At the Lincoln House the atmosphere is one of homey comfort. Fred sees to it that his employees make it that way. Lincoln is a small, country town; the Lincoln House is a small hotel. There are larger towns and larger hotels not too far distant, but the Lincoln House is filled every night, summer and winter, by those who have enjoyed its hospitality before and who travel from the beaten path to experience it again.

At no place in this north country is set a better table, yet his prices are modest.

Why is it that the food is so good, and how can Fred do it in these days of skyrocketing food prices? The answer is, he takes but modest profits on a full capacity volume of business created by quality and service at modest prices. Fred is exacting. He insists on the best in foodstuffs, personnel and equipment. And that's why his kitchen is 100% LP-Gas equipped!

The Lincoln House kitchen equipment consists of a Garland 2-section LP-Gas range, LP-Gas broiler and griddle combined, LP-Gas steam

table, two LP-Gas coffee urns and a Blodgett 3-compartment LP-Gas oven. Everything, excepting the broiler and range top, is thermostatically controlled. This fact is reflected in the quality of the food served here and in fuel cost. Fred has tried wood, coal, and dabbled with electricity as fuels. About six years ago he made a cautious trial of LP-Gas in a small way. It stuck. More LP-Gas equipment was added. Finally, Fred went for it 100%, and it has been proven to his satisfaction that it is the best of all cooking fuels.

I have often said that if you can't get all of the fuel load, take what you can of it, then work toward getting the entire load. The Lincoln House installation is proof of this.

Back when the company with which I was then associated first supplied gas service to the Lincoln House it was a modest undertaking. If we had insisted on the whole load or nothing we would have gotten exactly that. We had no doubts as to the worth of our product, but Fred had to be shown. Patience, consistent service and salesmanship, plus merit of our product, finally turned the trick. Persistence is bound to bring results if you are selling the right kind of merchandise, and you must have faith in LP-Gas if you are to sell it.

Passing mention might be made

Illustration of range, combination broiler and griddle, and steam table at the Lincoln House, Lincoln, Me. This picture was taken about two hours after the noonday meal. Note the immaculate cleanliness of the kitchen.

of a service which LP-Gas is rendering to the cause of war aviation which, from the standpoint of actual gas load, is more of a nuisance than of profit, but as an example of usefulness and as an advertisement, it is priceless.

Down at Brunswick, Me., there is a naval air training station which is one of the largest in the country. Here, young American and English flyers are trained in combat tactics. Over the adjacent ocean and above nearby Maine lakes, you can often see groups of training planes practicing all sorts of antics to the consternation of the natives.

LP-Gas Used in "Crash Trailer"

Occasionally one of these planes comes to grief, and emergency mechanical or medical service must be rendered. If this has happened near some lake, or over land, it is then that the emergency barracks of the United States navy spring into action. A large trailer which has been dubbed the "crash trailer" is speeded to the scene of the accident. This vehicle is equipped with hospital, barracks, and mess facilities. LP-Gas is used for cooking and sterilization purposes. War-time restrictions do not permit me to tell you what the equipment is, or to show you pictures of the interior other than of the living and sleeping quarters.

Men of the naval air station are warm in their praise of the service which LP-Gas has made possible in this trailer application. It has saved lives and made possible the salvaging of much equipment. If you operate in the vicinity of any good-

LP-Gas is used for cooking and sterilization processes in this "crash trailer" at a Maine airport.

sized airport and it is not equipped with a "crash trailer" it might be worth your while to bring this development to the attention of the proper authorities. You will never become rich from the resulting gas load, but Pete Anderson and his UDI Philgas dealers have gained from this one small war-time application of LP-Gas much free advertising which money could not buy.

In Aroostook county, Me., they have the habit of doing things in a big way. Aroostook raises the lion's share of the nation's potatoes. When potatoes are in the money, Aroostock citizens ride high; but when potatoes hit bottom, Aroostook does the same, still in a big way.

It was during one of those pros-

perous epochs in 1930 that leading citizens of Houlton built the Northland hotel. No mere hotel of rural appointments would do, and today it stands as a monument of civic pride that would do credit to larger and more prosperous towns.

Propane Replaces Oil

In 1932, Aroostook and the Northland hotel fell upon evil days and a reorganization was necessary. Houlton had built a hotel which its own local business could not support. Only by attracting the transient trade on its way to the Maritime Provinces could it be expected to operate profitably. Under new management and as a step in the right direction, oil as a cooking fuel was gradually supplanted by LP-Gas. Today the hotel kitchen contains the following LP-Gas equipment:

1 heavy duty, closed top, hotel range.
1 heavy duty, open top, hotel range.
1 deep fat fryer.
1 heavy duty broiler.
1 bake oven.
1 steam table.
2 coffee urns.

Under the efficient management of Alberic E. Mercier, about 21,000 meals per month are served at a gas fuel cost of approximately 0.21c per meal. Northland hotel breakfasts run from 35c up; luncheons from 85c to $1.35; dinners from $1.35 up, with a chef's special at $1. Mr. Mercier has changed the red figures on the ledger to black ones, and he is frank to admit that LP-Gas, with its unsurpassed qualities for the

Illustration of some of the LP-Gas appliances in the kitchen of the Northland Hotel at Houlton, Me.

One Picture Women Know . . . by heart

***"TAPPAN"** It's on the lips of thousands planning better homes after the war!*

***"TAPPAN"** It's the range promise of tomorrow—the beautiful, dependable, convenient, efficient aid to better meals —to come!*

***"TAPPAN"** It's what those who own one boast about. It's what those who do not own one see and read about, hear about and want!*

Yet, with all this preference established, Tappan *continues* its good-will tour—via the magazines women read most. Again this fall, the Tappan message will go into 17,687,359 homes—reaching approximately 70,000,000 people.

See the impressive new Tappan series, in *color,* in LIFE, LADIES' HOME JOURNAL, McCALL'S, WOMAN'S HOME COMPANION, BETTER HOMES AND GARDENS! THE TAPPAN STOVE CO., MANSFIELD, OHIO.

TAPPAN
L.P. Gas Ranges

better processing of foods, has helped to make this possible.

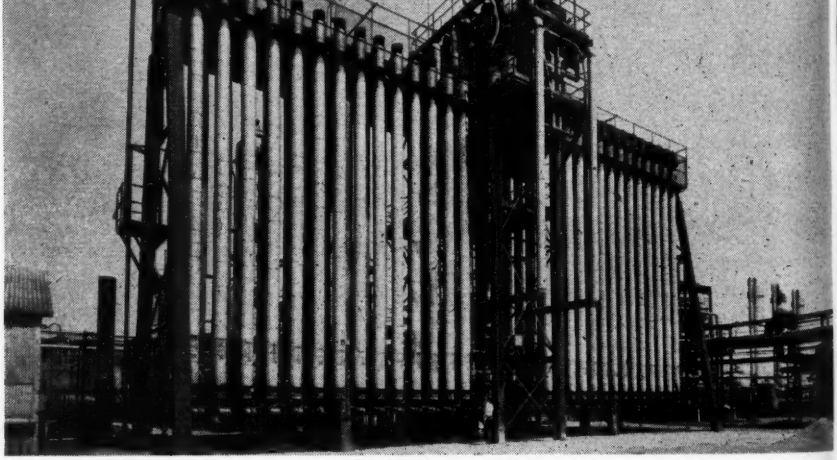
We must not fail to pay tribute to the gas dealer, Merle C. Rideout, who had much to do with the conversion of this hotel's kitchen to LP-Gas. Mr. Rideout is ambitious, and the domestic cooking load was too prosaic to satisfy his adventurous spirit. Had he listened to some of his fellow gas men he would have been too scared to tackle expansion of the original small LP-Gas installation at the "Northland."

In the foregoing I have given you authentic cooking costs with LP-Gas wherever possible. I have purposely selected these first random examples from the state of Maine because it is so far removed from the sources of LP-Gas and where LP-Gas prices must be higher than in other sections of the country for this reason.

Maine has given a good account of herself in the LP-Gas business in spite of the handicaps of distance, space, and sparse population, and it has been because those responsible for its development have had vision, singleness of purpose, and a sane concept of the value of sound financial and engineering practices.

Maine LP-Gas distributors long ago learned that progress is not gained by keeping dealers in ignorance, and they have accordingly spent vast amounts of time and money in educating those dealers. They, in their turn, have had much to do with educating the public to choose intelligent service rather than that rendered by organizations that attempt to sell LP-Gas and appliances on a dime store basis.

In our next chapter we shall visit other mass feeding operations of greater size, located elsewhere in the United States.



PETROLEUM PIPE ORGAN. A section of the cumene plant at the Wood River, Ill., refinery of the Shell Oil Co., Inc. Here in these 56 40-ft. high pressure reaction tubes, propylene and benzene are alkylated to make cumene.

Orders Affecting Butane-Propane Industry Summarized by PAW

THE following summary of Miscellaneous Orders which was prepared by Elmer E. Batzell, Special Assistant to the Assistant Deputy Petroleum Administrator, was transmitted to the LPGA by Paul K. Thompson, Chief of the LP-Gas Section of PAW. This supersedes the summary of last January and brings up to date all orders directly affecting the LP-Gas industry.

(1) **Scope** — General Purposes.— This circular discusses several of the more important orders of the War Production Board and the Office of Price Administration which govern the delivery and supply of liquefied petroleum gas equipment and gas consuming appliances. It also discusses methods of obtaining priorities assistance when such assistance is necessary to acquire liquefied petroleum gas equipment for maintenance or repair and other purposes. Order L-86, the principal order affecting the installation of liquefied petroleum gas equipment, serves a twofold purpose. First, it conserves liquefied petroleum gas itself; second, it conserves the use of critical materials by permitting the use of liquefied petroleum gas equipment only by the military and the most essential civilian uses.

(2) **Maintenance and Repair and Construction of LP-Gas Structures.**— Order L-86 now governs the maintenance and repair and the construction of structures used in marketing or distributing liquefied petroleum gas. Examples of these structures are loading platforms and storage facilities. Formerly, Order L-41 governed this type of construction work and permission had to be obtained under that order. This is no longer necessary in view of the most recent amendment of Order L-86 on August 26, 1944.

If an operator or dealer wants to obtain material for the maintenance and repair of these structures he may do so by using the appropriate ratings assigned in Order P-98-b or Direction 2 to P-98-b. The maintenance and repair of structures, however, does not include any use of material in connection with a service station or retail outlet other than for upkeep or restoration purposes.

For any construction of structure, other than maintenance and repair, the operator must obtain permission by filing PAW Form 30 in accordance with the instructions on that form. If the application is approved, all necessary priorities assistance to obtain materials will be assigned on that form.

(3) **Installation of Liquefied Petroleum Gas Equipment.**—Order L-86 is the basic order defining and restricting the installation, delivery and supply of liquefied petroleum gas equipment. As used in this order the term "liquefied petroleum gas equipment" means the entire gas system or any part thereof including storage tanks, cylinders, piping, tubing, valves, regulators, meters, etc. It does not include the gas consuming appliance nor does

it include facilities used for the transportation or refining of liquefied petroleum gas.

Under Order L-86 the installation of new or used liquefied petroleum gas equipment may be made only in accordance with its general provisions or pursuant to a specific exception. Under the general provisions of the order and without applying for a specific exception, an operator or dealer is permitted: (a) to install or reinstall certain used liquefied petroleum gas equipment which was actually in use prior to April 1, 1942, and which was withdrawn from such use on or subsequent to April 1, 1942; (b) to exchange or replace gas containers of equal or less capacity on the consumer's premises when the exchange is made in the normal course of liquefied petroleum gas distribution; and (c) to maintain or repair liquefied petroleum gas equipment. In all other instances, a specific exception to the order must be obtained by an application submitted on Form WPB-809. This form should be sent to the Petroleum Administration for War, Washington 25, D. C. Ref.: L-86; or to the Petroleum Administration for War, 855 Subway Terminal Building, Los Angeles 13, California, if the installation is to be made in PAW District 5.

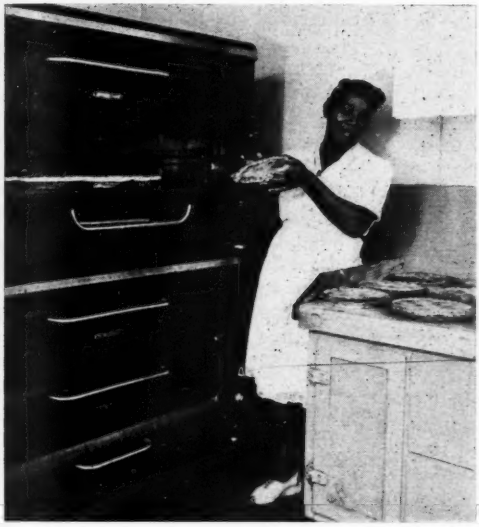
Reinstallation Is Governed

The reinstallation of equipment permitted under (a) of the previous paragraph can only be made by an operator if such equipment is not to be used for the purpose of connecting an additional gas consuming appliance to an existing liquefied petroleum gas system or the equipment is not to be used for the purpose of burning or consuming liquefied petroleum gas in an internal combustion engine. Before this equipment may be used for either one of these two purposes, the operator must first obtain a specific exception on Form WPB-809.

Among other things, the order permits equipment to be delivered to a liquefied petroleum gas operator or dealer for inventory purposes provided the purchase order bears a certification in accordance with paragraph (e) of Order L-86 or the special one-time certification permitted under Priorities Regulation No. 7. However, equipment may not be delivered for a specific installation unless an exception to Order L-86 has been authorized. Under Direction 1 to Order L-86 a special rule applies to the delivery of liquefied petroleum gas tanks. Under this Direction a tank manufacturer may not deliver liquefied petroleum gas tanks to an operator or dealer unless the operator or dealer accompanies the purchase order for tanks with the original document on which he obtained an exception to Order L-86. In addition, all purchase orders for liquefied petroleum gas tanks must be placed with the tank manufacturer within 60 days after the operator's application has been approved. This rule does not apply to the purchase of containers other than tanks as defined in Direction 1 to Order L-86.

In addition to the restrictions of Order L-86, Order M-9-c-4 also applies where installation of new or used copper or copper base alloy, pipe, tubing or fittings, as defined in Order M-9-c-4, is to be made. Under this order no installation of this material may be made (even though no specific exception is necessary under Order L-86) unless both ends of the pipe, tubing, or fittings are connected to the liquefied petroleum gas system. For instance, it may be used to connect a cylinder with a regulator or meter, but on the other hand such material may not be used to connect a gas consuming appliance to exist-

LP-GAS-FIRED BLODGETT OVEN EASIER TO CONTROL AND CLEAN



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STATES STEWARD OF AIR SCHOOL

"We use them to roast 600 lbs. of meat, and to bake 125 pies and 1200 biscuits or muffins daily.

"I prefer this type of oven, using bottled gas. It's easier to control; most anyone can operate it . . . it can be easily cleaned."

D. D. Varner, Steward
Lodwick School of
Aeronautics, Inc.
Lakeland, Florida

★

1 COMMERCIAL COOKING JOB = 20 DOMESTIC JOBS!

Yes, based on average installations, there's twenty times the load in a COMMERCIAL cooking installation. Why not write today for "The Commercial Cooking Load and How to Go After It". It's factual—and FREE!

The G. S. BLODGETT CO., Inc.

53 Maple Street, Burlington, Vermont

THIRD OF A SERIES IN *BUTANE-PROPANE NEWS*

ing liquefied petroleum gas equipment, and in no case may the material be attached or pass through a house or structure unless specific written authorization is received from the War Production Board.

(4) Preference Ratings for Liquefied Petroleum Gas Equipment.— Where it is necessary to obtain preference rating to secure liquefied petroleum gas equipment for inventory purposes (except maintenance or repair equipment) the operator or dealer should make an application to the appropriate War Production Board Field Office for such preference rating by one of the following two procedures:

(a) If the operator or dealer installs liquefied petroleum gas equipment on a loan, rental or lease basis, he should file Form WPB-541, because this equipment remains capital equipment of the operator or dealer. It is important to note that only those ratings issued by the War Production Board directly to the liquefied petroleum gas operators may be used by operators to obtain liquefied petroleum gas equipment for purposes other than resale. Equipment which will remain the property of the operator may not be obtained on ratings issued to or extended by a consumer account.

(b) If the liquefied petroleum gas equipment is resold to the consumer, then the operator or dealer should apply for a preference rating by filing Form WPB-547. It is preferable in this latter case not to require the consumer to apply for preference ratings on Form WPB-541. In most cases when the operator wishes to obtain equipment for domestic installations, preference ratings should be requested to obtain equipment which will be placed in the operator's inventory rather than applying separately for preference ratings to obtain equipment for each individual authorized installation.

For the purpose of maintenance or repair of liquefied petroleum gas equipment used for the storage and dispensing of liquefied petroleum gas by consumer accounts, preference ratings may be used as assigned in Order P-98-e. This order assigns a rating of AA-5 which may be used by consumer accounts and AA-3 which may be used by the operator or dealer who performs repair work for consumer accounts. Therefore, the ratings assigned by that order may be used for maintenance or repair when the equipment is owned either by the consumer account or by the operator. The ratings assigned by Order P-98-e may not be used to obtain the replacement or restoration of any complete storage or dispensing unit such as a tank or cylinder. Order P-98-e does not apply to the maintenance or repair of the consuming appliance. In most instances it is not necessary to obtain ratings for the maintenance or repair of consuming appliances.

How Refineries Are Affected

To obtain equipment which is used in connection with the manufacture, distribution or sale of liquefied petroleum gas such as equipment used in refineries bulk plants or bottling plants, either for maintenance or repair purposes or other purposes, liquefied petroleum gas operators or dealers must use Order P-98-b or Direction 2 of P-98-b for necessary priorities assistance. Order P-98-b does not provide priorities assistance to obtain material or equipment to be installed for or used by a consumer account.

Utility companies or operators who normally distribute liquefied petroleum gas through pipe lines or mains may use the preference ratings as-

signed in Order U-1 for maintenance or repair purposes but where such operators install additional consuming appliances or connect new domestic consumers of liquefied petroleum gas, they must, of course, comply with the provisions of Order L-86.

Neither Order P-98-b nor P-98-e may be used to obtain tank trucks or trailers or repair parts therefor. In the case of a truck or trailer the necessity of acquiring such an item should be established with the nearest District Office of the Office of Defense Transportation. Where priorities assistance is necessary for the repair of trucks and trailers, the operator may use a preference rating assigned under CMP Regulation No. 5. The operator must also comply with the provisions of L-158 with respect to automotive repairs.

However, P-98-b does provide priorities assistance to obtain material to be actually attached to a tank truck or trailer which is necessary for containing, dispensing or measuring liquefied petroleum gas.

(5) Installations of Consuming Appliances.—Most of the War Production Board orders restricting the delivery or installation of consuming appliances are now no longer applicable. Examples of such orders are Order L-182 and Order L-79. Generally, no authorization must be obtained or preference rating used to acquire consuming appliances. Certain consuming appliances, however, are still rationed by the Office of Price Administration. For any rationed item a consumer must make application to his local Rationing Board. In the case of an application for a rationed consuming appliance to consume liquefied petroleum gas, the local Rationing Board will not issue a purchase certificate unless: (a) liquefied petroleum gas is installed and has been used with appliances which need to be replaced; or (b) the person applying for the certificate can show that an exception under Order L-86 has been authorized by having in his possession an approved Form WPB-809.

(6) Delivery of Liquefied Petroleum Gas.—Order M-201 provides that deliveries of liquefied petroleum gas may be made by any person to any person without regard to preference ratings. It further provides that no preference rating shall be assigned to the purchase, sale or delivery of liquefied petroleum gas. Direction 2 to Order L-86 prohibits the delivery of liquefied petroleum gas by any person to any person for the purpose of using liquefied petroleum gas as a motor fuel in a passenger automobile.

Fred Henninger Heads Department for Anchor

F. A. HENNINGER

Lt. Fred A. Henninger, U.S.N., now on inactive duty, has been added to the staff of Anchor Petroleum Co., at Tulsa, Okla., as manager of the Engineering Service Department.

Mr. Henninger spent nine years in specialized work with LP-Gas systems and storage vessels, in Tulsa, prior to his assignment as aircraft engineering officer in the Navy. He is a member of Tulsa chapter ASME. He joined the Anchor Petroleum Co. organization on Nov. 1.

BUTANE Power

Why LP-Gas Makes Best Engine Fuel

By HAROLD W. SMITH
President, American Liquid Gas Corp., Los Angeles

UNDER present conditions it is difficult to get new trucking equipment, and in making present units do more work it takes a lot of planning to make them last longer and stay on the job day after day.

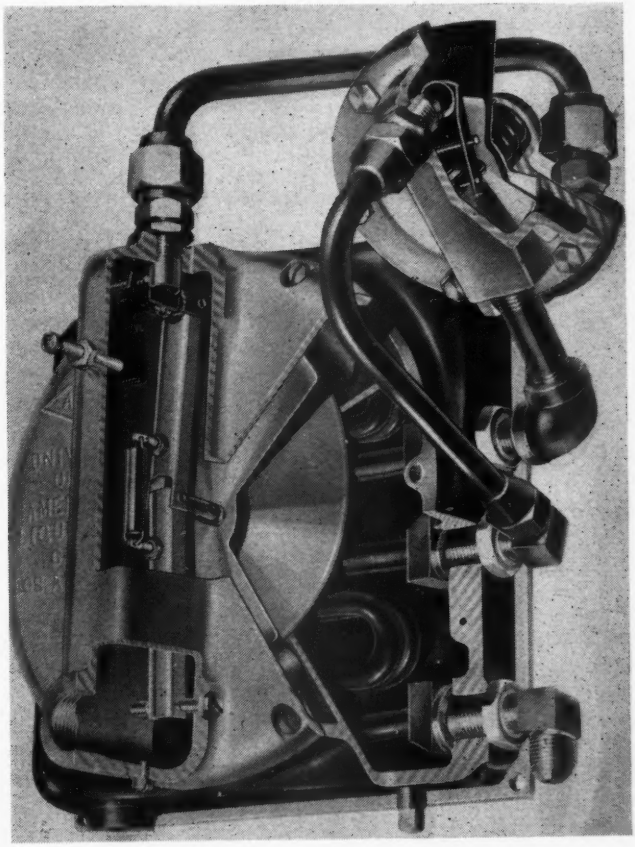
H. W. SMITH

Some outstanding results have been obtained in this regard, however, by the use of liquefied petroleum gas fuel, often referred to as propane and butane. This new fuel reminds one of steam. Combustion is slow, resulting in a steady push on the piston, thus getting away from the high initial power shock that apparently occurs with gasoline on the piston near the top of the stroke. This shock on the piston and rod, when directly above the crank, must be absorbed by the bearing, crank shaft and other parts, and results in strain and vibration throughout the power plant while contributing only a small amount to the output power.

The power effort and maximum torque occur from the pressure on the piston after it has passed top center, traveling on its down stroke. The largest part of the gasoline effort being expended at the top of the piston stroke leaves a relatively small part to force the piston down. In an effort to correct this, it was found the addition of ethyl fluid to gasoline slowed down the combustion and gave a more effective push on the piston. Liquefied petroleum gas has this natural tendency even to a greater degree—resulting in a flow of power resembling the smoothness obtained by expanding steam.

In addition to the above natural characteristic of this new fuel, which we will refer to from here on as LP-Gas, many other features exist from its use that tend to give all internal combustion engines more power and greater life, enabling them to haul heavier loads, require fewer repairs and last longer.

Gasoline is a blend of many hydrocarbons. Some are light and quite volatile. This variation causes a great deal of manifold trouble. Unless the manifold is thoroughly heated, and designed so the flow of gas through it is very rapid, the heavy ends in the fuel charge drop out and puddle in the manifold. If the truck is traveling up grade, they will run into the back cylinders, resulting in too rich a mixture, loss of power, carbon formation and oil dilution in those cylinders at the rear of the engine. If the truck is going down grade, they will flow into the front cylinders with the same result. The net effect is that some cylinders receive too rich a charge and some too lean a charge. This also gives an uneven power output from the various cylinders, causing vibration and strain throughout the equipment, not only in the motor but also the clutch, transmission, differential, bearings and even the tires—they will all wear out quicker



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Low pressure regulator, vaporizer and high pressure regulator for engine installation.

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and parts may even crystallize due to the incessant shocks.

LP-Gas consists primarily of two hydrocarbons (when propane and butane are blended) or one only when either straight propane or butane is used. These fuels, being natural gases, absolutely will not condense as a liquid in the manifold at the temperatures usually occurring there; also being gases, the fuel can easily be carbureted to give a perfect fuel mixture which is 100% combustible and which will give every cylinder an identical mixture, resulting in a smooth flow of power, and as the mixture is 100% combustible there will be no carbon or gum deposits to foul the spark plugs and collect on the valves and pistons.

Excessive Heating Eliminated

The absence of these carbon deposits eliminates pitting of the metal and excessive heating. Excessive heating of the piston head causes a breakdown of the cylinder oil as it is thrown against the hot under side of the piston. This breakdown of the oil in turn makes it necessary to change the oil often and also produces excessive wear of bearings and all moving parts.

It will be realized from the above brief comparison of gasoline and LP-Gas fuel that a chain of events follows the use of either fuel so that when gasoline is used it will tend to produce factors requiring comparatively frequent repairing and overhauling of the equipment, and when LP-Gas is used more power, less wear, less overhauling and greater engine life may be expected.

As the trend of equipment is towards larger units, greater horsepower, higher compression engines, LP-Gas is the answer to the fuel question for mine operators, contractors and all those using heavy duty equipment. The octane value of this fuel is in the neighborhood of 100, or above ordinary gasoline which has an octane rating in the 60's or 70's, with ethyl added bringing it up to the 80's. The cost of LP-Gas is no higher than gasoline, in fact in many communities its cost is considerably less.

Higher Compression, More Power

By raising the compression, much greater power may be taken from the engine, less mechanical trouble will be encountered, oil consumption and cost will be greatly reduced and, above all, in war time the equipment will produce more work as well as last longer and require less manpower for maintenance and parts while so doing.

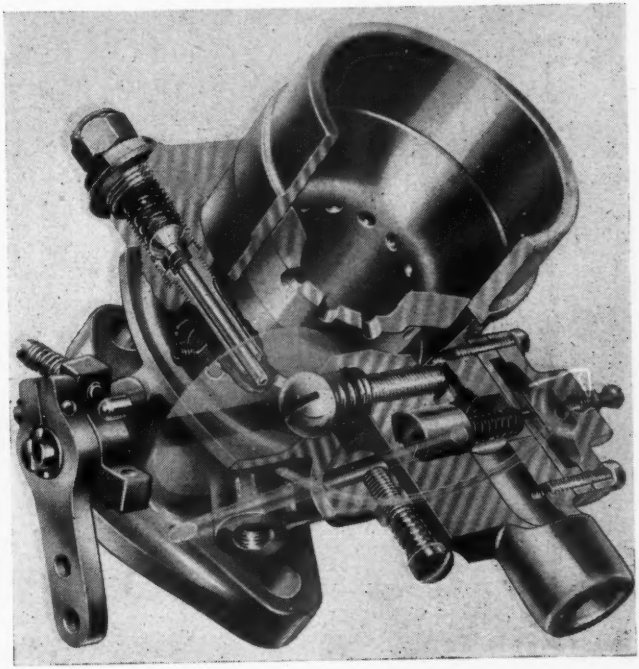
To illustrate the above points, the writer was talking to a California rancher a few days ago, who stated that the Allis-Chalmers tractor he was using had been in heavy service for three years without an overhaul or breakdown, and during the same period he had worn out two diesel units, one after the other, using them till the repair and upkeep charges made it unwise to continue their operation, and now with the shortage of manpower and trained diesel mechanics he was very happy to have the ordinary gasoline unit converted to LP-Gas fuel, for he could use it day after day without breaking down.

At a recent Iron Mine Opera-

tions meeting, held at the University of Minnesota, a paper was given by Gerald H. Bach, of Phillips Petroleum Co., covering the maintenance of equipment using LP-Gas.

The highlight of this paper was a discussion of five large mine trucks placed in service in April, 1941, and up to Jan. 1, 1943, these five units had handled 2,100,000 tons of ore within 35,670 hours. All maintenance expense, including starting motors, fan belts, labor, material, etc., amounted to only $1300 for the five units. It was explained that the original tapered piston rings that came on the engines caused more than usual breakage of pistons and rings, contributing primarily to the above expense, and this item has now been greatly reduced by using straight rings. All original bearings and crank shafts are still in use and in good condition. At the same time Mr. Sather, lubrication engineer for the Standard Oil Co., who supplies the oil for this operation, pointed out that where the oil on these Hesselman truck engines used to be changed every 80 hours, they are now drained at the end of an 800-hour period and have been run in excess of 1000-hour periods.

Gasoline units have been converted to LP-Gas for quite a few years, with large savings resulting to the companies taking advantage



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Algas carburetor used on LP-Gas conversions.

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of this new development. However, the swing to the conversion of diesel equipment to LP-Gas has only taken place within the last few years, but it is gaining considerable attention and headway due to the necessity of keeping the truck and tractor units on the job, thus reducing the need of highly trained diesel repair men, the growing scarcity of parts, and the mounting expense of maintenance.

Several of the leading mine operators have been pleasantly surprised at the savings effected as shown by extensive tests which they have conducted and there will undoubtedly be a marked trend to LP-Gas conversions of existing equipment and a demand for it on new units of the future, due to greater efficiencies and lower operating costs required under modern conditions.

This serviceman carries his service kit with him when he is reading meters so he can test appliances, if needed. It saves time and tires—important, these days.

Tom Gorman, Oklahoma Dealer, Will Feature Engine Conversions

Four months after entering the LP-Gas equipment distributing business for himself, Tom Gorman, Tulsa, Okla., expressed his faith in the future of the industry by moving into larger quarters.

For 14 years Mr. Gorman had been employed by the A. W. Schuller Co., of Tulsa, during the past two years as manager. In his various capacities with the Schuller firm he became well known in the LP-Gas industry throughout eastern Oklahoma and adjacent territory where he pioneered in butane carburetion.

Last June Mr. Gorman purchased all of the LP-Gas equipment from the Schuller firm, including Ensign carburetors, Bastian-Blessing and Fisher Governor products. He has been appointed exclusive distributor in th eastern half of Oklahoma for Ensig equipment and has worked out ar rangements with the oil field suppl houses and engine companies branc offices to stock Ensign carburetor and parts to accommodate adequat field service on butane and natur gas carburetors.

Operating under the name of th Tom Gorman Co., the firm has 160 square feet of floor space at its ne location, 801-803 South Detroit, Tulsa This is a considerable increase ove the space available at his old locatio 214 East Tenth St.

The company has installed suff cient additional facilities at the ne location, where he removed Oct. 20, t enable him to service LP-Gas equip ment handled by him and to insta liquefied petroleum carburetors o trucks and tractors.

CURRENT READING

• Reviews of new books, pamphlets and articles published in recent magazines of interest to technicians and executives in the liquefied petroleum gas industry. Those interested in reading any complete article or book should write to the publications named.

New Plant Combines Refining, Natural Gasoline and Pressure Maintenance—"Oil and Gas Journal," Aug. 12, 1944, pp. 63-66. The 100-octane aviation fuel refinery of Abercrombie and Harrison Refining Corp., at Sweeny, Tex., is designed and built especially to correlate with producing operations of light and heavy crudes, natural gas and with pressure maintenance in the same field. It is built close to the two operations of field production and pressure maintenance, and near the third operation for recovery of light products, natural gasoline and liquefied petroleum gases. These four operations are combined in a very unique manner, the designers believe, for materially improving the operation of each phase of the system.

Cracking and Embrittlement in Boilers—H. N. Boetcher. "Mechanical Engineering," Sept., 1944, pp. 593-601. Deterioration of the component parts of a steam-generating unit represents one of the major problems in the production of power and heat. The occurrence of numerous types of "wet" and "dry" corrosion, of cracks, and of so-called embrittlement complicate the problem. With all of these factors complex and involved, one source of confusion is a tendency to ascribe all cracking or embrittlement to some one cause. An attempt is made, therefore, to list and describe, for identification, the characteristics of the principal types of cracks, cracklike penetrations, and embrittlement found in pressure parts of boilers, with particular emphasis on caustic cracking and a recently discovered type of crack in high-pressure boilers. Since only fundamental types are covered, cracks such as "fire cracks" which usually represent either creep or corrosion fatigue are not referred to separately.

Polymerization of Isobutene Over Hydrosilicate Catalysts—B. A. Kazanskii and M. I. Rozengart. "National Petroleum News," Sept. 6, 1944, pp. R-643-645. Polymerization of isobutene in the presence of Gayer's catalyst and "solid phosphoric acid" yields products of similar composition, which indicates similar polymerization abilities of these catalysts. Catalysts prepared by the method of Gayer and containing zinc or monovalent thallium are incapable of polymerizing isobutene. A catalyst prepared in the same way and containing thorium actively polymerizes isobutene, but is rapidly poisoned. Its isomerizing ability is weak. Hydrosilicates of metals constituting the carriers of the acid properties of the catalysts serve as the active ingredient in polymerizing catalysts prepared by the method of Gayer.

Synthetic Rubber—Progress Report No. 6—Bradley Dewey. "Chemical and Engineering Newes," Sept. 10, 1944, pp. 1471-1477, 1514. The author, Rubber Director, in his letter of resignation reports that the tasks for which the Baruch Committee recommended the creation of the Office of Rubber Director were unique; peculiar

to a nation dependent upon rubber and suddenly cut off from its supply. A synthetic rubber industry has been established and is in complete operation. It is providing the nation with an ample supply of rubber. From this point on, the problems incident to converting the new synthetic rubbers to goods essential on the military and home fronts are substantially the same as the more or less routine problems facing every great industry in wartime. Success or failure will depend upon whether sufficient tire cords, carbon blacks, and particularly manpower are provided to the rubber goods manufacturing plants.

Distillation and Isomerization—R. G. Lovell. "Petroleum Engineer," Sept., 1944, pp. 188, etc. Author discusses: Significance of isomerization in the refining picture of the future; value of isomerization as a process balancer; polymerization; butane isomerization as a conservation measure; how cooperative operation of isomerization facilities will help in conservation; technical and physical aspects of cooperative facilities for wet gas processing; general description of the isomerization process; application to various conditions; simple chemical aspects of isomerization; octane number blending value of hydrocarbons; historical background of isomerization and other processes; mechanics of butane isomerization; isomerization in liquid phase.

Deeper Cracking Triples Butylene Yield from Naphtha Reformer—"National Petroleum News," Sept. 6, 1944, pp. R-576-579. Standard Oil Co. of Ohio unit operated at severe temperatures since July, 1943, to increase output of material for aviation gasoline; equipment shows no excessive wear or corrosion. A flow sheet of the unit is shown.

Power Distribution: Use of Smaller Units Permits Greater Flexibility—N. Williams. "Oil and Gas Journal," Sept. 2, 1944, pp. 35, 36. For comparable total horsepower, difference in initial cost for large and small-sized engines is relatively little. In some types of engines the cost of the smaller sizes, although more units are involved, is slightly less than that of the larger.

Natural Gas — Natural Gasoline Terminology. "California Oil World," 1st Aug. issue, 1944, pp. 7, 25. Definitions of terms used in these industries are listed.

Chemistry in Petroleum — J. L. Franklin. "Petroleum Refiner," Aug., 1944, pp. 111-114. Author briefly discusses the following: Engine design, gasoline, butylenes, alkylation, synthetic rubber, toluene from petroleum, chemicals, natural gas, petroleum additives, and petroleum in war.

Problem of the Small Refiner—O. W. Willcox. "World Petroleum," Annual Refinery Issue, pp. 154, etc. Octane standards for postwar motor gasoline will be higher, but skillful management of thermal cracking may still enable operators to stay in the business.

For Good Performance Give Your Centrifugal-Pump Packing a Break—H. Platt. "Power," Aug., 1944, pp. 67-69. What practices help difficult packing applications of centrifugal pumps do a better job? This article contains pointers, together with the causes of some failures and their correction.

Development of the UOP Butane Isomerization Process—J. A. Chenicek, C. G. Dryer, and R. E. Sutherland. "World Petroleum," Annual Refinery Issue, 1944, pp. 146, etc.

"Rockgas" Firm Establishes New Los Angeles Bulk Plant

Steady growth since its founding in 1910 has made expansion a necessity for the Imperial Gas Co., of Los Angeles. Acquisition of a new location for offices, warehouse and service yard was announced by A. N. Kerr, president. The move to larger quarters will take place Dec. 1. The address is 3673 9th Ave., Los Angeles.

Over an acre will be devoted to the sales and service of liquefied petroleum gas and equipment for home and export use. The new location is just four minutes drive from the present offices on South Flower St., and can be reached by driving west on Exposition Blvd. until it merges with Rodeo Road. Continue along Rodeo to Ninth Ave., where the new site will be found just around the corner to the north.

Added facilities for servicing trailers will be a special feature of the new plant. A warehouse for storing stocks of cylinders and appliances such as stoves, space heaters, refrigerators and a large stock of regulators and fittings will enable the company to maintain a greater reserve of these items. Being located along a spur track will facilitate the handling of equipment in carload lots and reduce the shipping costs.

This new location marks the company's 19th bulk plant. Additional bulk plants in other sections of the state are being planned for the near future. Large propane storage facilities will be a special feature of the Los Angeles plant.

A supply of seamless cylinders and bulk propane storage tanks will be set up for sale to propane-butane distributors through an associated company.

Oklahoma Firm Shows Confidence in Future by Large Construction Program

By O. D. HALL

A SIZEABLE new service shop building, recently completed, stands as an evidence of the confidence of the American Butane & Propane Gas Co., of Oklahoma City, Okla., in the future of the liquefied petroleum gas industry.

The essential nature of the business in war-time was recognized when the War Production Board granted priorities which permitted the new structure, 40 x 80 ft. in dimentions, to be constructed and equipped with modernized machinery and an adequate supply of parts for truck repairs and LP-Gas installations.

But the faith of J. L. Grigsby, president of the company, does not stop here. He has planned for a post-war expansion which includes construction of a new bottling and filling plant, housed in a concrete and tile building. This will be an enlargement of the present bottling and filling plant, which will be removed to a location more nearly the center of the grounds occupied by the company's various facilities.

Many Future Orders Filed

With a long list of orders on file for equipment, appliances and additional installations, the firm anticipates all of the business it can possibly handle as soon as present restrictions can be removed or materially relaxed.

"Our post-war program includes stocking of Electrolux refrigeration combinations, air conditioning and forced air heating, and deep freeze units," said Mr. Grigsby. "In expanding our facilities we will continue to lease our propane aboveground systems which have proven most satisfactory for heating, cooking and refrigeration. We made hundreds of such installations before the war in our territory and have demands from customers which assure a much wider expansion of this service after the war."

Mr. Grigsby states that he also plans an expansion program in butane carburetor conversions on trucks, tractors, industrial and oil field jobs. His firm is distributor for Algas carburetors, adjustable for use of butane, gasoline or natural gas. In the new shop building, adequate machinery and tools have been installed to give complete service on such equipment.

Engine Conversion Parts Carried

In a 25 x 40 ft. space, provided in the front of the new shop building, will be stocked all types of parts for carburetor repair and conversion jobs, tank fittings, regulators and everything else necessary for making LP-Gas fittings and repairs, Mr. Grigsby said. A sizeable stock of these parts was being placed in the department when this article was written.

Difficulties in securing expert servicing of its trucks and other equipment, and expensive delays in having this work done at various garages in the city, induced Mr. Grigsby to plan the new shop, which duplicates in size the present administration building and doubles the floor space.

The new building is a one-story brick, concrete and steel structure with combination steel and wood-trussed roof. Along the east side of the building and facing a concrete-paved space are three 10 x 12-ft. doors of sufficient size to admit the largest LP-Gas trucks and other mobile equipment. These serve as entrances to stalls amply equipped for servicing of such vehicles. One of these is designed for lubrication, grease and wash jobs and can be separated from other stalls by dropping of canvas curtains.

A laboratory for testing and repairing LP-Gas heat exchangers, all kinds of butane and propane regulators and appliances, has also been installed.

In front of the new structure is a well equipped butane filling station where the fleets of trucks operated by the company are fueled. The filling station is also available to the Oklahoma City water department tank trucks, which operate on butane, and to trucks and cars belonging to motor transportation firms and private individuals who utilize LP-Gas as a motor fuel.

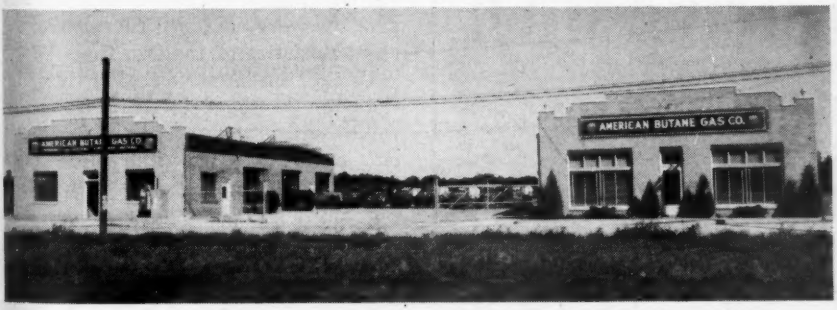
In the administration building, located across the paved space to the east of the new shop quarters, is a large stock room, appliance and equipment display space, customer service and bookkeeping department, and executive offices.

Both buildings are well equipped for conducting a large and expanding liquefied petroleum gas sales, distributing and servicing business. A 220-volt electric line, run into the new shop building, provides power for operation of electric welding, grinding, drilling and buffing machinery. Propane gas is used for cutting and for space heating of the buildings.

M. L. Mayfield Named Engineer for District 3

M. L. Mayfield, petroleum engineer, is the new engineer and technical adviser for District 3, Natural Gas and Natural Gasoline Petroleum Industry Committee, appointed by the Petroleum Administrator for War, according to N. C. McGowen, committee chairman. The offices of the committee are in Houston.

District 3, Natural Gas and Natural Gasoline Committee, functions in six states—Alabama, Mississippi, Louisiana, Arkansas, Texas and New Mexico.



New shop building (at left) and administration building of the American Butane & Propane Gas Co., Oklahoma City. A well equipped butane filling station, and the fleet of service and tank trucks of the company are shown in the doorways and at back of paved space.

Radio Program Tells Of Cleveland Fire

WITH the desire to inform the public that the explosion and fire at the East Ohio Gas Co.'s liquefied natural gas plant did not concern liquefied petroleum gas, the Lawrence H. Selz Organization, Chicago, arranged a radio program on the "Farm and Homemakers" hour, over the "Blue Network," Oct. 20, explaining all facts in the case.

F. McCOLLISTER

The explosion resulted from the escape from huge holders of natural gas the temperature of which was 250° F. below zero as a result of having been compressed to 1/600th of its gaseous volume. Because of the liquefaction process involved, many users of butane and propane were confused concerning the characteristics of the two fuels.

Under the direction of Frier McCollister, of the Selz Organization, a radio script was prepared and sent out nationally over the Blue Network. It had much to do with allaying any fears held by users of LP-Gases, some of whom were confused by the similarity of the two terms.

The Selz Organization is retained by the Liquefied Petroleum Gas Association to acquaint the American public with the advantages and conveniences of butane and propane over

competitive fuels and the Cleveland accident provided an excellent opportunity to get over valuable, constructive propaganda to the American public.

Texas Court Grants Injunction In Butane Law Test Case

District Judge J. Harris Gardner granted a permanent injunction in October against W. M. Foster, operator of a butane gas servicing station in Marshall, Texas, in a test suit brought by the Texas Railroad Commission under the Liquefied Petroleum Gas Act. Judge Gardner overruled Mr. Foster's contention that the law does not allow for any injunctive penalty but intended that the Railroad Commission should impose penalties after hearing. The injunction prohibits sale, installation or servicing of butane equipment which has not been approved by the Commission.

The Commission asked the court to enjoin Mr. Foster from installing unapproved tanks or other equipment. Although the law was passed in 1937, Preston D. Craig, assistant director of the Gas Utilities Division, said little difficulty was encountered regarding butane containers until the war made metal scarce for civilian usage.

Two other cases against butane-servicing companies are pending in Judge Gardner's court. Mr. Craig said that the commission is conducting other investigations.

Bragg's Butane Establishes Branch in Chowchilla, Calif.

Bragg's Butane Supply Co., of Fresno, has put in a branch station at Chowchilla, thirty miles to the north, from which the surrounding farming area will be served.

THE TRADE

Roadmaster Sales Corp., Dallas, Texas, announces that Tom Clark, formerly "Engas" engineer for the El Paso Natural Gas Co., is now employed by them as sales and service engineer. Mr. Clark has had several years experience in sales and engineering of LP-Gas equipment. He will travel the South and Mid-West. His experience in engineering bulk storages, dispensing systems, vaporizing and gas-air mixing plants, and all types of conversions of internal combustion engines, will enable him to assist his clientele throughout his territory.

Roadmaster Sales Corp. has made continued progress towards establishing a complete equipment service for the LP-Gas Industry throughout the South and Mid-West, and will continue to expand their service and operations in keeping with existing conditions.

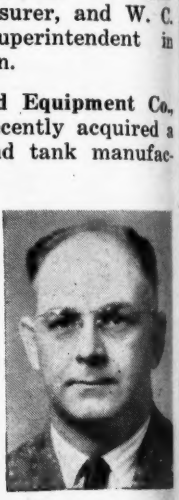
Dallas Tank Co., Inc., has just received from the printer's a new catalog of products manufactured at the Dallas, Texas, plant. These include butane-propane storage tanks, truck tanks, transport tanks and "Economy" underground LP-Gas systems, the last named ranging in size from 108-gal. to 1200-gal., water capacity, with working pressures from 100 lbs. to 200 lbs. Copies of the catalog will be mailed industry members upon request to P.O. Box 5387.

Officers of the Dallas Tank Co. are W. W. Banks, president; Mrs. Jewel

Tappan Stove Co. officials are shown here as they looked over the first gas range manufactured for civilian use since Sept. 30, 1942. Left to right: C. V. McConnell, general sales manager; J. S. LeMunyon, assistant plant superintendent; R. M. Lamb, plant superintendent; Verne O. Kyle, personnel director; Paul R. Tappan, president; Ray J. Hammer, advertising manager; and William R. Mabee, assistant plant superintendent.

M. Banks, vice president; Harry L. Leyda, sales manager; Mrs. Sue Gibbons, secretary-treasurer, and W. C. Leahy, general superintendent in charge of production.

Southern Gas and Equipment Co., Tulsa, Okla., has recently acquired a steel fabrication and tank manufacturing plant at Sapulpa, Okla. This plant will be increasingly busy with production of LP-Gas tanks, vessels, transports and truck tanks, all, of course, within the limitations of L-86, in the company's extended business in gas systems and equipment.



F. DE LARZELERE

The group actively directing the concern is led by Frank De Larzelere, president, former district manager of the War Production Board, Fort Smith, who has been engaged in liquefied petroleum gas enterprises for many years; Henry Meyers, Fort Smith, vice president; Glenn Bullis, secretary-treasurer, formerly associated with General Electric Supply Co., Tulsa; and H. D. Streator, manager of plant and production, former secretary-treasurer of McNamar Boiler & Tank Co., Tulsa.

The home office of the company is in the Atco Bldg., Tulsa.

Thomas E. Rooke, 57, district manager of the Geo. D. Roper Corp. in the Iowa-Nebraska territory, passed away at the hospital in Longmont, Colo., on Oct. 5, having been taken there after a heart attack suffered Sept. 27. Funeral services were conducted Oct. 10 at Omaha, Neb., where

Mr. Rooke had made his home for a number of years.

Tom Rooke joined the Roper organization in 1918, covering at various times New York State, Michigan, Iowa, Colorado, Montana, Wyoming, Idaho, Nebraska, and Utah.

The dean of Roper's field organization in point of service, he was well known throughout the entire gas industry. Active in Association committee work, he served as president of the Mid-West Gas Association in 1943.

Kerotest Manufacturing Co. has announced the appointment of George R. Allen as general sales manager of its brass division, effective Nov. 1.

GEO. R. ALLEN

For the past eight years, Mr. Allen has been associated with Mueller Brass Co., as sales manager of its Standard Products Division. He is secretary and a director of the Refrigeration Equipment Manufacturers Association, and was recently reappointed to the General Refrigeration and Air Conditioning committee of the War Production Board.

Rheem Manufacturing Co. is mailing out to the industry copies of an elaborate booklet entitled, "A Story of Decentralized Manufacture." It shows the company's principal offices throughout the country, tells of the part played in war production, and outlines the scope of its postwar operations.

If interested, send for this book to Carlton Johanson, public relations

manager for Rheem at 576 Lexington Ave., New York City 22.

Norman E. Thompson, formerly with Republic Steel Corp., who joined the Rheem Manufacturing Co. early this year, has been appointed production manager of the nine Rheem plants making up the company's eastern division.

Florence Stove Co., Gardner, Mass., stove and heater manufacturer, has announced the establishment of a Southwest sales division comprising the states of Texas, Louisiana, Arkansas, and Oklahoma. The new Southwest division is one of the results of an intensive study Florence has made of its sales set-up with an eye to serving range and heater dealers better.

T. E. COOK

Thomas E. Cook has been appointed manager of the new Southwest division, with offices and display rooms at 301 N. Market St., Dallas 2, Texas. Mr. Cook is widely known in the Southwest, having represented Florence in the Texas area for many years.

Appointment of the Fuelane Corp. as distributor for the **Servel Gas Refrigerator** was made this week by Geo. S. Jones, Jr., vice president in charge of sales for Servel.

The Fuelane Corp., whose home office is at Liberty, New York, will sell and service the Servel gas refrigerator which is adaptable to their type of liquefied petroleum gas.

The area that they cover will be

he entire states of New York, Maine, New Hampshire, Vermont, Massachusetts, Pennsylvania, Delaware, and Maryland. The refrigerator will be sold through dealers of the Fuelane Corp.

The A. J. Lindemann & Hoverson Co., Milwaukee, long-time manufacturer of domestic cooking appliances, announces that plans for the postwar resumption of range manufacture include an expanded home economics department for which Miss Geraldine Corman has been selected as director.

Miss Corman, a graduate of Western Illinois State Teachers College, is well qualified for her new post by her past experience of four years as home service adviser with the Commonwealth Edison Co., Chicago, preceded by several years of teaching home economics in Illinois high schools.

At an executive meeting of the American Gas Association held in New York on Oct. 4, the Association membership elected **Frank J. Hoenigmann**, who is executive vice president and general manager of Cribben and Sexton Co., Chicago, manufacturers of "Universal" gas ranges, as a member of the Association's executive board, and chairman of the Association's manufacturer's section.

Mr. Hoenigmann is also chairman of the gas range division of the Association of Gas Appliance and Equipment Manufacturers.

The Hotstream Heater Co. celebrated the opening of its new plant on Oct. 18 by feting its employees at a dinner party on Oct. 18. President L. R. Mendelson addressed the group.

The new plant, located at 2363 E. 69th St., Cleveland, Ohio, approximately doubles the company's produc-

tion facilities, and is now completely equipped to meet the postwar demand for the water heaters and domestic, commercial and industrial combustion control equipment.

Grand Home Appliance Co., announces through its president, James Mitchell, the appointment of A. B. Cameron as assistant sales manager.

A. B. CAMERON

"Al" Cameron, as he is more familiarly known, joins Grand with an interesting background of experience in the gas appliance field, covering every conceivable phase of the industry. Experimental research, development of appliances, sales and advertising are simply a part of the day's work to "Al" Cameron.

Over a period of 15 years he served as manager and sales manager of the Philgas Division of the Phillips Petroleum Co., of Bartlesville, Okla., supplier of liquefied petroleum gas to thousands of homes located beyond the gas mains. "Al" also managed one of the leading sales organizations in the appliance field and will be remembered by dealers for the outstanding consumer promotions he developed while serving in this capacity.

H. I. ("Hi") Beardsley, veteran executive in the sales department of Pittsburgh Equitable Meter Co., has announced his intentions of early retirement from active business.

"Hi" started with the Pittsburgh organization on July 1, 1912. For many years he traveled the New York

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and New England territory for the old Pittsburgh Meter Co., predecessor to the present organization. From 1918 to 1930, he was district manager in the Chicago territory.

Mr. Beardsley, for the present, will remain active in company affairs and lend his assistance to H. D. Leisenring, who has been appointed as his successor.

Rudd Manufacturing Co., Pittsburgh, Pa., makers of gas water heaters, has elected the following new officers: R. H. Lewis, president and general manager, succeeding A. P. Brill, who has been made chairman of the board; J. H. Sorg, vice president and counsel; M. M. Scott, vice president in charge of sales and advertising; K. M. Clark, secretary and treasurer, and J. K. Roth, assistant secretary and assistant treasurer.

R. H. LEWIS

The company has completed all its war contracts and has reconverted its Kalamazoo, Mich., and Toronto, Ont., plants to the manufacture of gas water heaters within the limits imposed by the War Production Board.

Tokheim Oil Tank and Pump Co., Fort Wayne, Ind., has recently promoted E. S. Higginbotham, who has served as vice president and sales manager, to executive vice president.

Mr. Higginbotham joined Tokheim as assistant manager of the New York branch in 1938, and was made manager before he was called to the home office as vice president in charge of sales in 1941.

Robt. E. Simpson Has Been In New Guinea Two Years

Robert E. Simpson, widely known in the Midwest by members of the LP-Gas industry, is rounding out his

Robt. E. Simpson in New Guinea

second year in New Guinea. He is in the Signal Corps.

Keeps Informed on Industry

Mr. Simpson was associated with The Fryogas Co., of North Kansas City, Mo., before entering the Service, according to W. Watkins, of the same company. Mr. Watkins states that every month he pares down BUTANE-PROPANE *News* to the mailing weight limit and sends it to Mr. Simpson so that he may keep informed on industry matters at home.

Larger Tank Car Loads Permitted, November to March

H. Emerson Thomas, chairman of the LPGA Transportation Committee, has issued the following bulletin covering the regulation relating to tank car shipments of LP-Gas during the winter months:

"We felt it might be very appropriate to specifically call to the attention of all shippers of liquefied petroleum gas that the Interstate Commerce Commission regulations allow a higher loading of tank cars of LP-Gas in the months November to March inclusive.

"The Association Transportation Committee obtained this approval from the Interstate Commerce Commission February 10th, 1943, and this is the first year we can get the full benefit from it, in order to move more product in the existing fleet. With the threatened shortage of pressure cars, it is of greater value than ever before to be able to make each car carry a little more product than the old table allowed.

"We therefore specifically refer you to Supplement No. 7 to Agent H. A. Campbell's Freight Tariff No. 4, publishing Interstate Commerce Commission regulations for transportation of explosives where, on page 35, it covers an amendment of Note 3, Section 303(q)(1) of the same section on page 99 of the original tariff, but as amended in Supplement No. 6. In Supplement No. 6 on page 30, is set out the specific table that is to be used with the amendment covered on page 35 of Supplement 7.

"Taking advantage of this winter loading density table will assist in moving more product and thus possibly eliminating run-outs that otherwise might occur."

AGA Laboratories Issue Gas Research Bulletins

Distribution by the AGA Testing Laboratories of five newly published bulletins places before the industry latest published results of the accelerated research program sponsored by the Committee on Domestic Gas Research. Three of these new bulletins are devoted to gas cooking research, one deals with gas water heating and the fifth with a study of non-aerated burners.

Devoted to domestic gas cooking research, Bulletin No. 27 is entitled "A Study of Performance Characteristics of Vented Domestic Ranges." It gives extensive consideration to effects of chimney drafts on performance of top, oven and broiler burners of various types of ranges. Special attention is devoted to those of flush-to-the-wall design.

Bulletin No. 28, "Electric Ignition of Gases," is devoted mainly to igniters of the hot wire coil type and a complete analysis is made of various factors involved in providing satisfactory ignition with particular respect to coil temperature and time required.

Water Heaters Are Studied

Bulletin No. 29 is "Principles of Design and Sizing of Automatic Gas Water Heaters for Maximum Service Efficiency." Results of extensive studies are presented on the sizing of automatic storage heaters for maximum efficiency in service. One series of recommended sizes is offered, designed to furnish unlimited hot water service where flexibility is more important than operating cost. A second covers the slow recovery type of service where cost of operation is of greater importance than an unlimited hot water supply.

Possibilities of improving operating

efficiency by use of flue gas and hot water heat traps, elimination of metal-to-metal contacts, insulation of storage vessel bottoms, two-stage heating, and other factors are evaluated.

"Non-Aerated Burners," as Bulletin No. 32 is titled, gives extensive data on conditions under which luminous or non-luminous flames are obtained with burners of this type. The study covers fundamentals underlying the combustion of different gases without primary air and sets forth basic principles which will be helpful in the design and utilization of burners employing this feature.

Issued as the ninth publication in the gas cooking series, Bulletin No. 33, "Design Features Affecting Gas Range Surface Temperatures" is devoted to effective insulation of ovens and broilers. Extensive new data are presented on heat loses through doors due to metal-to-metal contacts and leakage of flue gases. Substantial reductions in such losses are shown to be possible by suitable constructional features, with resultant lowering of surface temperatures of exposed range parts.

Chinese Renew Interest In Approved Appliances

Even in China it is possible to check American gas appliances should one have occasion to do so. A letter from Liming Tseng, Director of the Chinese National Bureau of Standards, Ministry of Economic Affairs, at Chungking has been received by the American Gas Association Testing Laboratories thanking them for the Directories of Approved Gas Appliances and Listed Accessories which have arrived from time to time. The letter, which was three months in transit, reopens correspondence with the Chinese government from

which the Laboratories had not heard since the United States entered the war. In former years the Chinese had displayed much interest in gas equipment requirements and testing procedures and made a number of requests for publications covering them. On several occasions representatives visited the Laboratories.

Anchor Petroleum Co. Expands LP-Gas Facilities

Anchor Petroleum Co., Tulsa, Okla., officials announce the recent purchase of a number of Class 105-A-300 propane tank cars for the movement of Anchorgas to their customers. The purchases were made to meet increasing demands on the company's facilities.

The Anchor Gasoline Co. also announces the installation of new equipment at its Eola, Avoyelles Parish, La., plant. This new equipment will considerably increase the production of natural gas, butane and propane. The company also has installed propane equipment for the recovery of commercial propane.

Anchor Gasoline has been supplying large quantities of butane-propane mixtures for delivery to tank truck equipment.

Skelgas Buys LP-Gas Business of H. J. Porter, Oklahoma Dealer

The Skelgas Division, Skelly Oil Co., Tulsa, Okla., has purchased all of the physical assets of the Northeastern Oklahoma Liquefied Petroleum Co., of Tulsa, H. J. Porter, vice president.

The transfer was effective Sept. and included all stock of the company, trucks, bottling plant and storage tanks. The Northeastern company served 17 counties in Northeastern Oklahoma.

Virgil Stark Elected President, No. Am. Utility & Const. Corp.

Virgil Stark has been elected president and treasurer of the North American Utility & Construction Corp., according to word received from the New York City headquarters of the company. He was formerly vice president.

Mr. Stark replaced B. B. Weiss who recently resigned and sold his stock in the corporation. Walter G. Groth, who has been serving in the Office of War Utilities, War Production Board, Washington, is the new vice president.

The North American Utility & Construction Corp. has constructed twenty Defense Housing projects in six states since the war started. These have a gross LP-Gas storage capacity of 270,000 gallons.

Exporters to South America May Have Free Spanish Book.

To aid the current movement to bring the Americas closer together in understanding and trade relations through an exchange of language knowledge, the "Pan American Society" has prepared a free pamphlet which describes the words and endings of more than 300 Spanish and English words that are spelled exactly the same.

Applicants for the pamphlet on "Simplified Spanish" only need to send their names and addresses to the above society at Box 315, Quito, Ecuador, South America.

Potentially, there is an enormous field in South American countries for LP-Gas. It is already used there limitedly.

While domestic use has predominated so far, there has been a demand for the fuel for well drilling operations and industrially.

Stove Rationing Order Modified

Several minor changes in stove rationing regulations have been announced by the Office of Price Administration, and became effective Nov. 1. They are contained in Amendment 17 to Ration Order 9A—Stoves.

One of the new provisions will make ration certificates for coal-gas combination stoves more readily available to consumers. This is being done because supplies of this type of combination stove have shown a moderate increase.

Other changes, made in recognition of practices in the stove industry, are as follows:

1. Dealers and distributors who store their stoves at places other than the one where all orders are accepted, may consider these places of operation as part of one establishment and register them as such.

2. The regulations that permit distribution through exclusive sales arrangements—made with one stove dealer or distributor in a given area—are broadened to allow manufacturers and distributors to continue these special sales understandings with more than one dealer in an area.

Oven Thermostats Permitted Under L-23-c Amendment

The War Production Board on Oct. 20 amended L-23-c, its domestic cooking appliances and heating stoves order, to permit production of oven thermostats and burner valves. Copper and copper base alloy were recently allocated for production of these two items, WPB officials explained.

Any person wishing to manufacture thermostats or burner valves

CLASSIFIED

Classified advertising is set in 6-point type, without border or display, at the rate of 10 cents per word per insertion; minimum charge per insertion $2. Box numbers for replies count as 5 words. Count as a word each one letter word and each group of figures. Classified advertising is only accepted when payment accompanies order. Copy and payment must reach publisher's office prior to 10th of month preceding publication.

EMPLOYMENT WANTED

EXECUTIVE OF LARGE MIDWEST DISTRIBUTOR of propane, with commercial and industrial as well as domestic experience desires change. Will consider any location wherein there lies expansion possibilities. Write Box 360, BUTANE-PROPANE News, 1709 W. 8th St., Los Angeles 14, California.

BULK PLANT MANAGER. OVER TEN years experience. Familiar with equipment. Warehouse, Propane Carburetors, Tank Trucks and Personnel. Box 370, BUTANE-PROPANE *News*, 1709 W. 8th St., Los Angeles 14.

EQUIPMENT WANTED

WANTED—ONE OR MORE 10,000 OR 15,000 Gallon Tanks for Propane or Butane. Preferably with Fittings. CARBOMATIC CORP., 1775 Broadway, New York 19, New York.

EQUIPMENT FOR SALE

FOR SALE: TWO COMPLETE BUTANE Motor Pump Dispensing Units. One 2100 gallon Columbian Butane Tank, One 900 gallon Parkhill-Wade Butane Tank. Each unit complete with Viking Pump, ¾ h.p. Motor, Smith Meter, 25 feet hose, explosion proof light and motor starter. UREGAS SERVICE, INC., Box 152, Moberly, Missouri.

FOR SALE: 1524 WATER GALLON CAPACITY Columbian Truck Tank. Excellent Condition, 125-lb. working pressure, complete with pump, meter box, power take off and hose. $1,350.00 CASH F.O.B. Moberly, Missouri. Write UREGAS SERVICE, Inc., P.O. Box 152, Moberly, Missouri.

must apply for authorization by letter to the WPB Plumbing and Heating Division, Washington 25, D. C., the agency said. Authorization on Form GA 1850 will be granted on the basis of the applicant's proposed use of labor, possibility of interference with war production, and available facilities.

Previously, production of thermostats was prohibited by L-23-c. However, some were made on an appeals basis. Burner valves, formerly not controlled by Order L-23-c, have been brought under the order. The copper order, M-9-c, which limits the use of copper to 1½ ounces for each valve, is being changed to permit full use of copper for burner valves.

The current amendment to L-23-c also removes Schedule A, which established production percentages that the industry as a whole was permitted to produce. Since stove production is now authorized on an individual basis and material is allocated for a specific number of each type of stove, the percentages permitted by Schedule A are no longer necessary, WPB said.

New Research Library Built for Gas Institute

A new gasification research laboratory is being built for the Institute of Gas Technology at Illinois Institute of Technology, it has been announced by John I. Yellott, director of the Gas Institute.

The new laboratory, which will add 30% to the space available for gas industry research, was scheduled to be ready Sept. 1. Though the structure will be used primarily for gasification research, a portion will be utilized as an addition to the Gas Institute library.

For the duration, the Gas Institute is devoting its activities exclusively to research.

Thirty Plants or New Additions Being Built

Construction is proceeding on 30 major natural gasoline and cycle plants or additions to existing facilities in California, each costing more than $250,000 and aggregating $30,000,000. This over-all picture of construction in the two allied industries was presented recently by C. E. Webber, chief, natural gasoline section, Petroleum Administration for War, addressing the annual meeting of the California Natural Gasoline Association.

Mr. Webber warned that termination of the European phase of the war would not relieve the urgent demand for natural gasoline and allied products. There has been no thought given to curtailment of alkylation or isomerization operations, he said, because air-force authorities are pressing PAW for improved quality aviation fuel.

Only the less desirable base stocks or exceedingly high cost components will be diverted, if a reduction in total volume results from Germany's collapse.

Air Volume Found to Govern Engine Power

The horsepower of an internal combustion engine is fixed by the air it gets rather than the amount of fuel, according to the results of tests made at the National Bureau of Standards, Department of Commerce, on substitute fuels for possible use in parts of the world where petroleum is not readily available.

In the tests, bureau experts operated engines on alcohol, both conventional grade and in mixtures with water containing as little as 35% alcohol.

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